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NEWSPAPER

NEWS IN BRIEF

New FBI Chief Favors DP for Enforcement

WASHINGTON, D.C. — One of the nation's foremost promoters of computerized law enforcement has been confirmed by the Senate as director of the Federal Bureau of Investigation.

Clarence M. Kelley, Kansas City, Mo., police chief, has been a pioneer in the use of data processing and computers for law enforcement and assistance to the officer in the field.

There is widespread speculation over what changes will be made in the bureau now that Kelley has been approved. Most feel Kelley will instigate a campaign to modernize the agency's investigative techniques and to implement far-reaching DP law enforcement programs.

In addition to federal funds, Kelley has allotted 5% of the police budget to DP, as opposed to the 2% to 3% most cities allocate. The investment is worthwhile, he feels, since he estimates a 20% to 25% return.

Nebraska Governor Continues Push Toward Open Bidding

LINCOLN, Neb. — Following a charge that pressure tactics were used in an attempt to thwart public bidding on state computers [CW, March 28], Governor J. James Exon has continued to solidify the position of the open bidding forces in this state despite continued attacks from some state senators.

Led by Sen. Terry Carpenter of Scottsbluff, the senators have sponsored amendments to various bills that would remove computer selection power from the state's administration.

The governor, meanwhile, has been able to muster the necessary votes to defeat each of the amendments.

A team of computer consultants provided through the Council of State Governments has been set up to evaluate the bids as well as the original prospectus and its specifications.

On the Inside

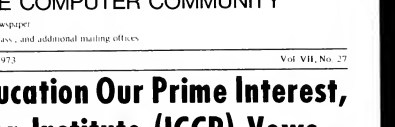
Continuing Education Our Prime Interest, New Computer Institute (ICCP) Vows

By Edward J. Bride
Of the CW Staff

CHICAGO — Continuing education for computer personnel, including retesting holders of the Certificate in Data Processing (CDP), will be a prime interest of the new Institute for the Certification of Computer Professionals (ICCP).

Formerly called the Computer Foundation, the Institute will apparently be incorporated this month, according to members of the organizing committee which held a briefing session here last week at the Data Processing Management Association's annual conference.

Several members of the audience noted, with the agreement of the committee, that the timeliness of the CDP is an area of concern for the employers of CDP holders and even for members of the public who must rely on the knowledge of DP professionals.



CW Photos by Edward J. Bride

Donn Sanford, Dr. Carl Hammer, Herbert Safford and James Sutton hold press confereace during DPMA show.

Just as a doctor would outgrow his technical competence if he did not keep up with trends and advancements, data processors must do the same, panelists

(Continued on Page 2)

Bell Chief Raps 'Productivity'

By Edward J. Bride
Of the CW Staff

CHICAGO — Society demands that the new tools of computer technology be applied to public service. Yet in many of these areas, such as medical services and education, the computer community has "declining productivity," according to a top AT&T executive.

Lindholm

Private business now has the opportunity to participate "in the largest growth sector of society," while society can now fulfill its aspirations with the help of computer users, William L. Lindholm, vice-chairman of the board at

(Continued on Page 3)

It is time important for computer users to design information systems "that will not merely flood decision-makers with data, but will enable them to make intelligent choices," William L. Lindholm, vice-chairman of the Board at AT&T

DPMA's Show Is a Mixed Bag

A CW Staff Roundup

CHICAGO — Despite a significant drop in its exposition size the annual conference of the Data Processing Management Association came close to equaling last year's attendance total of 5,200.

The seminar or conference attendance was about 1,900, the same as last year's meeting in New York. Exhibit booths were down from 70 to about 50, and DPMA officials declined to speculate whether the show would be profitable.

Seminars Well Attended

While seminars in general were well-attended, the same could not be said of the exhibit hall, except for opening day, according to booth staffers.

And Dr. Carl Hammer, director of computer science for Univac, told a press gathering after receiving the award as the Data Processing Management Association's man-of-the-year that he foresees "nothing radical" in computer peripherals technology until solid-state devices replace moving parts, primarily motors, in computer equipment.

In the near future, he said, peripherals would experience moderate improvements, and this will remain the status until the industry "gets a better handle on solid-state technology."

Justice, IBM Square Off In N.Y., Judge Is Reserved

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK — Chief Judge David N. Edelstein last week reserved decision on a government motion to hold IBM in contempt of court for its failure to produce 7,500 documents in the government's antitrust case against IBM.

At the sometimes heated session Edelstein also reserved decision on an IBM motion charging the government has destroyed documents needed for its defense.

On the contempt question, both IBM and the Justice Department agreed that a contempt citation should be issued, but IBM lawyers claimed that the citation should only be against Bruce Bromley of IBM's outside law firm of Cravath Swaine and Moore.

The Justice Department, however, said that IBM itself should be held in contempt and that strict coercive penalties should be levied in order to force IBM to stop its blatant disregard of the court order.

Raymond Carlson, the lead government attorney, noted that the court order has been in effect for over a year and that "the time of implementation is now."

"IBM's failure to comply is one that continues and will continue," he added.

Carlson pointed out the Supreme Court itself had refused an IBM motion that would have delayed implementation of the order, and he added that IBM and its attorneys admit they are not going to obey or comply with the order.

Considering IBM's size and strength, and

(Continued on Page 2)

Court Tells Utility to Revamp Billing, Stress Human Contact

By Marguerite Zientara
Of the CW Staff

CINCINNATI — An appellate court here in upholding a lower court ruling, has ordered a Toledo gas company to enforce a personal notification system and rely less on its computer in its billing practices.

The class action suit against Columbia Gas of Ohio, Inc. was filed over a year ago by Mr. and Mrs. Morris A. Palmer, who alleged their gas service had been terminated in violation of their constitutional right to due process.

The Sixth U.S. Court of Appeals affirmed a district court ruling limiting Columbia Gas' reliance on its computer in determining which customers have paid their bills.

The original U.S. District Court ruling found that "significant and tragic mistakes" were made by the company in keeping up with the payment or nonpayment of bills.

Some Guidelines

The guidelines upheld concerning notification processes for the firm toward customers who are believed to be in arrears

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Education Our Prime Interest, ICCP Says

(Continued from Page 1)

said.

Fred Harris, the representative of the Association for Computing Machinery (ACM) on the organizing committee, agreed the "typical practitioner" of data processing "becomes outdated faster than most other professionals," such as doctors or accountants.

Self-Study Vital

Jim Adams, who helped draft the original CDP exam and who was representing ACM in the audience, said that self-study was necessary for computer people to keep informed.

Likening the situation to that faced by doctors, Adams noted computer people might eventually be encouraged to voluntarily take tests which are graded anonymously. They would receive a detailed listing of their weaknesses, plus recommended bibliographies to correct those weaknesses, he said.

It was suggested by a few attendees that recertification might be difficult because the technology is changing so fast, but committee members noted that is the precise reason it is needed.

Eric Ustad, a vice-president of DPMA, which currently administers the CDP exam, said some voluntary recertification takes place today.

A member of the audience related that he took the original CDP test (successfully) in 1962, then retook it three years later to ascertain its growth.

"I would be afraid to take it today," for fear of flunking, he noted. "I know of some pretty sharp people who haven't passed," he added.

The briefing session was attended by about 50 people, most of them DPMA members who were here for the conference. The ICCP, when it is incorporated, will consist of members of DPMA, ACM and about eight other professional DP societies.

Educational Duties

The educational duties of the Institute are unclear at this stage, although they appear to fall in two chief areas, committee members indicated — preparation for the original CDP test (courses and review manuals) and similar prepping for recertification.

Another educational aspect falls in the realm of public relations, and that would be convincing company management of the value of the CDP. Already, some firms provide cash bonuses as incentives to become CDP holders, Ustad noted.

Recalling the mission of the Institute, John Swearingen, organizing committee cochairman and DPMA's representative to the committee, stated that "the longer we wait" for pushing acceptance of the CDP, "the longer we risk outside policing" and regulation.

Harris, on the other hand, insisted that the licensing of computer programmers is a certainty, even though it may be as much as five to 10 years in the future.

He saw this certainty as another example of the need for good certification procedures (on the assumption that the CDP is the best people-measurement tool available). It is thus the most likely basis for future licensing projects, he noted.

Other ICCP Activities

Other activities for the Institute will apparently include the development of codes of ethics or standards of good practice. DPMA is among the societies that have recently recommended such codes (part of their suggestions are included in the June issue of *Data Management*, its monthly magazine), which are the equivalent of "flag and motherhood" statements, Harris said.

The reason for their ineffectiveness, he suggested, is the fact that neither the CDP nor an ACM membership had ever been revoked because of a lack of professionalism, despite constitutional clauses of ACM and DPMA that would permit such revocation.

At any rate, the final report of the organizing committee is due in a few days, with the filing of incorporation papers also near, Harris said.

The other DPMA certification program is the Registered Business Programmer (RBP) exam, and Ustad foresaw the Institute taking over that test.

Swearingen said DPMA had an "obligation" to RBP holders not to cut off the exam, which has fallen short of financial success. "It will continue in some mode," he noted; Ustad then predicted that ICCP would take over the RBP some time "in the year beginning July 1."

'Bootlegging'

Swearingen also acknowledged serious problems wrought by "bootleg" courses and manuals for CDP study. He said most of these were poorly prepared, some of them inaccurate, and none of them authorized by DPMA.

For this reason, DPMA or the Institute will probably be required to develop its own study courses for prospective takers of the CDP exam.

Judge Is Reserved in New York

(Continued from Page 1)

the already long delay in the case, Carlson said the government wants immediate implementation of a lawful court order which IBM, he said, has clearly refused to obey.

In suggesting a citation of contempt only against Bromley, IBM urged that a fine of $100/day would be sufficient, but Carlson said the penalties should be "sufficient in amount and immediate in effect" to force IBM to comply.

'Get Mr. Big!'

Carlson pointed out that Bromley and the other outside IBM attorneys were only representatives of the company and the company itself should be held in contempt.

In asking for a penalty of 5% of IBM's daily revenues for each day in contempt, Carlson indicated that that was a sufficient amount to make the company realize that "an order of the court is being disobeyed."

He also indicated that such a finding would "make it clear" to IBM that the court wants its orders obeyed. Carlson claimed that if the government were right in the merits of the case, IBM is presently "enjoying the fruits of monopoly," and he noted that there was "a vast public interest in the case."

At the same time he noted that the government's costs due to the delay on the part of IBM in delivering these documents had been "substantial."

In the second action, government attorneys argued that the government itself had taken all reasonable steps to assure that the documents were not destroyed that would be needed for the IBM case, even though in a few cases they admitted some documents might have been destroyed inadvertently.

At the same time, Carlson noted the government in the past month had to take all of the Justice Department staff off trial preparation and assign it to answering IBM charges of government document destruction.

'Who, Me!'

For every charge outlined in IBM's affidavits in indicating destruction of documents, Justice Department attorneys offered counterclaims showing that nothing major had been destroyed.

The charges "showed that IBM has converted an order it asked for into a sword against the government," Carlson said.

He added that the Justice Department had "done its best" to investigate the charges and he noted that they involved thousands of government installations.

"It is time for IBM . . . to pinpoint sites that have relevance to its case," Carlson said, so that those sites can be required to save all their documents and the other site can be released.

"But," he said, "IBM's motives for prolonging the case will not allow" it to do this.

Bell Users Can Ask For Direct Technical Assistance

By Ronald A. Frank
Of the CW Staff

CHICAGO — AT&T has told users it intends to concentrate its new equipment in the medium- to high-speed data transmission ranges, and that users can now directly ask last technical assistance from the AT&T Datec group.

Speaking at the 22d annual conference of the Data Processing Management Association, William I. Lindholm, vice-chairman of the board at AT&T, said the carrier will "focus its attention on ... high- and medium-speed data sets." Within this area, Lindholm said AT&T plans to offer "a dozen or so" data sets that will "meet the needs of most of our customers."

By providing this type of equipment, Bell meets the "broad-based needs of most data communications users," he added. The medium- to high-speed communications user would also be included in Bell's plans for data terminals and transmission capabilities, Lindholm said.

User Support

At a seminar on data communications, other Bell System representatives described the methods by which local operating companies are supporting the data user. The Data Technical Support (Datec) plan was described by Marvin J. Zollner, operations supervisor for AT&T.

The Datec program was begun last year to provide technical assistance to data users, Zollner said. There are presently about 200 area Datec representatives in Bell System operating companies and independent phone companies, he said.

In an apparent departure from previous Datec procedures, Zollner urged users to request Datec assistance when they felt local field representatives were not adequately handling a problem situation.

Under these conditions, he said data users should request Datec assistance through either their sales or communications marketing contacts at the phone company.

Previously, AT&T had said that Datec assistance for a technical problem could only be requested by local field representatives, and not by users.

When one of the 200 Datec specialists is unable to resolve a problem, a "mandatory escalation phase" goes into effect so that Bell experts can become involved as quickly as possible, Zollner said.

If one of the 200 area specialists needs help, the problem is passed on to 28 AT&T experts at Bell headquarters.

If the problems still remain, they are passed to two experts at 195 Broadway in New York. These representatives will do whatever is necessary, including direct consultation with suppliers of independent non-Bell equipment, he said.

Bell Chief Raps 'Productivity'

(Continued from Page 1)

AT&T, noted in his keynote address to the DPMA conference.

While offering no specific solutions to this challenge, Lindholm said he would not debate criticism that the use of information technology is "too important to be left to the technicians ... you and me."

How to Be Human

Critics suggest that "we are so preoccupied with fascinating mathematical tools available to us that we have forgotten to be real people," he recalled.

"You and I do have a responsibility to develop means whereby our marvelous new tools can be applied to such activities as the distribution of medical services, to education, to the great public service areas," he added.

"In these we have extremely low productivity, and in many of them we have declining productivity," he said," adding "our society demands enormous increases in precisely these public services.

"We must learn again what an earlier generation learned, that the raw materials of industrial progress are not tinned steels or the stelled rows of machine tools ... but the hands and hearts of human beings," he added.

Disjunction in History

Aside from the problems of society, managers have begun to realize that "we are living through a major disjunction in history," he stated.

"We can no longer conceive the future, as once we could, as a simple extrapolation of the past," he said.

It is thus important for computer users to design information systems "that will not merely flood decision-makers with data, but will enable them to make intelligent choices.

"Top management faces no more perplexing task than that of assessing not just the accuracy and validity of the data it receives, but the meaning and significance of that data's implications," he related.

The task of synthesizing computer usage into a "formal discipline" has "hardly begun," he added.

The rapid growth of computer and data transmission technologies says nothing, he continued, about "whether the information revolution is being properly administered, whether its raw power is not given exaggerated significance over its qualitative dimension."

Mark Sense Speeds Amex

NEW YORK — A mark sense card is the secret behind the American Stock Exchange's ability to complete and record individual transactions in 15 seconds.

As each trade takes place, an exchange reporter records transaction details, such as number of shares, price and ticker symbol by checking the appropriate boxes preprinted on the computer card. The card is then placed in the reader which optically scans the markings and transmits the data to the exchange computers.

The old procedure required the reporter to write a sales ticket for each trade and a clerk to manually input the data, via a keyset device, to the computers.

When a new Market Data System in comes into play later this year, the mark sense units will be used to speed information to inquiry units on the floor and in member firms' offices after each transaction on the trading floor.

Airlines Fight Fuel Waste

WICHITA, Kan. — Backed by support from the Civil Aeronautics Board, computers are entering the fight to alleviate an energy crisis.

Continental Airlines is already using a computer to plot several different flight plans, including the most economical, the fastest and the smoothest ride. "The system is used for all the routes so as not to waste fuel," an airline spokesman said.

'Revitalized' DPMA Set to Tackle External Challenges

By Edward J. Bride
Of the CW Staff

CHICAGO – Having "turned the corner" on financial and membership recruiting problems, the Data Processing Management Association is ready to tackle other, external challenges.

These include ethics, computer security, continued cooperation with other professional groups, striving for benefits for companies which employ DPMA members and public education, officials said here last week.

James B. Sutton, new DPMA president, said this concept amounted to a "revitalization of the association," and should not reflect poorly on recent administrations, which had been criticized for poor fiscal management and for the decrease in membership.

The real challenge now facing DPMA, he said, is "can we produce in the coming year?", which he described as "one of the most crucial years in the history of DPMA."

Outgoing President Herbert Safford said the international directors had exhibited a new interest in the association, and that last year's reorganization of disperse centralized power had been a success.

As an example of new programs, Donn Sanford, executive director, noted the recent publication of guidelines for government liaison was a first step [CW, June 17]. It might be 24 to 36 months before DPMA launches a "major effort" in this area, but he agreed with Sutton that this idea does represent an important new direction for DPMA.

While Sutton looks for continued cooperation with the groups that comprise the American Federation of Information Processing Societies (Afips), as well as the new Institute for Certification of Computer Professionals (ICCP), he also said he hopes for new liaison with peripheral societies such as the American Bankers or the American Management Associations.

Safford said it was too early for a prediction on whether DPMA would accept the invitation to join Afips [CW, June 20], and that a committee would report on a study of the advantages and disadvantages of membership in "two or three months."

Several board members had received their first exposure to the Afips organizational structure during the annual directors meeting held at the beginning of the annual DPMA conference here last week, he added.

'New Profile' Approved

During this meeting, it became obvious, Safford said, that the directors and members had given support for DPMA to take on a "new profile," including public contact, security and ethics.

The financial situation is stabilized, and the membership trend is up again, he explained. Thus DPMA is able to take on a new perspective.

Associations in general must face the fact that their industry is changing, and they must be ready to change, he related, if they are to serve their members adequately.

However, direct service cannot stop with an association's membership, Safford continued.

Now that computer utilities are looming as distinct near-term possibilities, it is important that quasi-technical societies educate the public on the benefits, uses, problems and social aspects of such utilities.

The professional associations must help in this type of public education, he said.

Court Offers Guide For DP Billing Use

(Continued from Page 1)

include speaking personally to the customer or a reliable adult in the house and allowing 24 hours for the customer to contact the company over any disputed bill before termination action is taken.

Columbia Gas, based in Toledo, has a computer in Columbus which serves a seven-state area for the company.

Defense attorney Caty R. Cooper said a reading was normally taken from each customer's meter every other month, although there were occassions when the meter reader could not enter the house, sometimes occurring at the same place over a period of several months.

In such cases, the company's computer estimated the bill based on a mathematical formula which took into consideration previous consumption, weather conditions and previous bills.

In several cases brought before the court, customers received bills for about $12/mo for a series of about five estimated bills and then, after an actual reading, received a bill of about $200 covering actual usage above the estimations.

Problems also occurred in the area of late payments.

"The computer was so programmed," according to Michael Frank of Advocates for Basic Legal Equality (Able), Inc., attorney for the plaintiff, "that whenever a bill was overdue, it automatically issued a shutoff notice." Since the company is in Toledo and the computer is in Columbus, there was a lag time between payment of the bill and the input of that information to the computer. Consequently, according to Frank, shutoff notices were issued without checking to see if that bill had been paid recently.

The result was that customers who had paid their bills or who had made arrangements with the company to pay the bill were having their gas shut off based on computer-generated information.

Columbia Gas now has a manual system of review of the status of bills before any termination action is taken, according to John Pickens, district manager for the firm.

In addition, equipment has been added enabling access to the Columbus computer for all accounts via telephone lines. The new system has "practically eliminated errors," according to Pickens.

Who Can't 'Fathom' World?

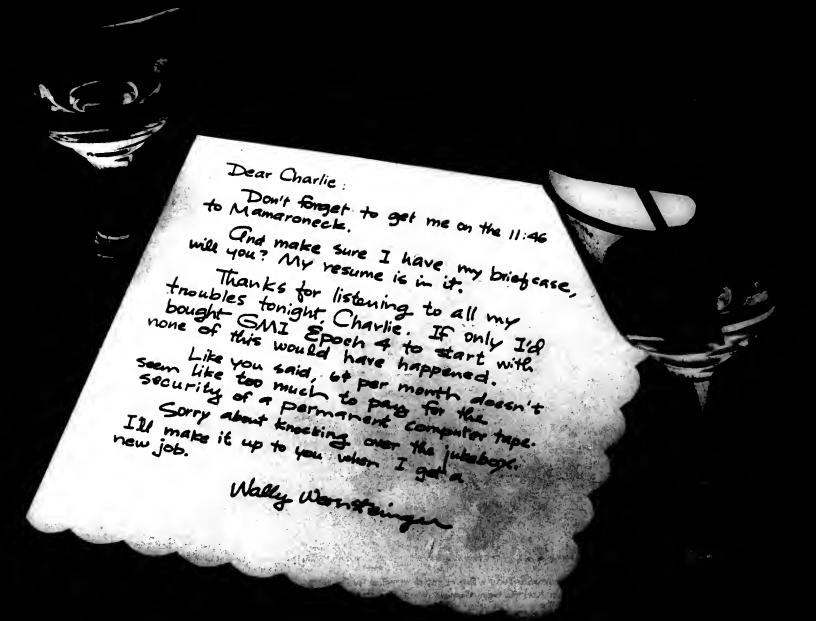
ANNAPOLIS, Md. – If you need data on national or international affairs, foreign fleet sailings or the latest polls on Watergate, a computer at the U.S. Naval Academy here may readily supply the information.

The Fathom (Foreign Affairs Theory of Operations and Management) program is used by the political science department at Annapolis to keep track of every fact or event which might link actions.

The immense memory of the computer contains among other things, every vote of every country in the UN since its founding, armaments expenditures, Gross National Products and the communication ties between them.

Already investigators have used the data to confirm that the more foreign aid one nation gives another, the more their UN votes differ, according to Prof. John R. Probert, chairman of the political science department.

Next time that economical tape you bought to impress the boss costs the company a ton in re-run time, here's a note for your bartender:



GRAHAM MAGNETICS
Graham, Texas 76046

CITY OF LOS ANGELES ISSUES RFP

The Board of Police Commissioners of the City of Los Angeles, California on June 20, 1973, has issued a Request for Proposal(s) for:

1) The design and production of individualized multimedia learning materials. Total contract price not to exceed $28,0,000.
2) The development of evaluation procedures. Total contract price not to exceed $20,000.
3) The design for a system for the management and distribution of the individualized multimedia instructional materials. Total contract price not to exceed $60,000.

Copies of the RFP obtainable by mail or pickup, written request required, from Mr. Barry Simon, 1880 N. Academy Drive, Los Angeles, California 90012. Bids will be received at the above address until 5 pm, July 25, 1973. Performance bond for amount of the bid(s) is required. For more information, call Mr. Simon at (213) 485-3554.

Some Security Problems...

How Hair Spray Can Gum Up DP

By Marvin Smalheiser
CW West Coast Bureau

SANTA MONICA – Once the data processing manager solves his obvious security problems, then he must be prepared to start worrying about serious problems . . . like hair spray and doors that slam.

Robert A. Sutake, an audit executive for Rockwell international, found these problems to be significant threats to data security.

Sutake, speaking at a recent EDP Auditors Conference here, outlined a plan for computer center security and fire prevention. He also described an incident in which hair spray was sucked into a company's air-conditioning system.

The spray got into the computer center via the air-conditioning ducts and residue found its way into disk drives.

Disk performance was affected but the reason wasn't discovered for weeks.

Sutake also told of a vibration-sensing device that kept picking up a vibration that was traced to a door slamming in a distant part of the building.

Sutake's proposed program involves internal and external environments as well as support systems, operations and emergency plans.

Externally, he said, the location of the computing facility should be analyzed to assure that hazards, both natural and man-made, do not present excessive dangers.

"Patterns of experience with such nuisances as earthquakes, floods, excessive winds, electrical disturbances or extreme weather conditions should be carefully investigated before sites are selected."

Also to be considered, he said, are such potential man-made problems as aircraft flight patterns, land use patterns, local heavy construction, inherent building strength and integrity and the availability of fire and police departments.

Watch Air-Conditioning

Internally, he said, precautions should be made regarding air-conditioning ducts placed over computers.

Fires in other parts of a building, he said, could bring smoke and intense heat onto the computer through the ducts.

Sprinkler systems, Sutake said, should be designed to avoid dumping water on electrically "live" equipment.

"One approach to this problem," he said, "is the installation of flow switches to detect the slightest movement of water from the sprinklers.

"These switches can be connected to the emergency power-off mechanism to cause the equipment to shut down immediately when water begins to come into the room."

In tape libraries and supply storage areas it is important that sprinklers be positioned to spray into the stacks, not just on top of the cabinets, he said.

One approach to assuring adequate backup water for cooling central processing units is to use industrial water from building faucets through hoses and sand and diatomaceous earth filters, he said.

"While this water cannot be recycled because of impurities and heat buildup, it is sufficient to cool machines for short periods without damage to cooling systems."

Louisiana Reshuffling Its DP Operations Into Three Centers

BATON ROUGE, La. – The State of Louisiana is currently revamping its computer system by consolidating and modernizing its numerous smaller centers, some with obsolete equipment, into three major centers, according to Tom Walker, director of the Office of Information Services.

Twenty-five temporary employees are currently working in Washington, D.C., on conversion and system development for the project. Walker explained that the marketplace is tight in Louisiana for people with exprcience on the state's Honeywell 6000, and the state could not afford to relocate personnel temporarily.

The largest pool of this type of programmer is in the D.C. area because of the Federal Government, Walker said.

The state will retain what it calls its highway center, which is a scientific and engineering center, and which will provide support to all agencies in that general area of interest, as well as support to the smaller schools in the state.

In progress is the modernizing and updating of the state's administrative center, which installed a Honeywell 6000 in December 1972.

Two Univac 418s are being combined with a Univac 494 toward the development of a criminal justice system which will feature a store-and-forward message-switching capability throughout the state.

In the financial area, the state is looking to a centralized cash management system for such things as financial reporting, cash flow management and centralized payroll processing.

Antitrust Laws, an Historical Perspective — Part III

Alcoa Case Contains Precedents for IBM-U.S. Suit

By E. Drake Lundell Jr.
CW Washington Bureau

WASHINGTON, D.C. – Even though the government's case against IBM is often called the most important antitrust action since the Standard Oil case which was decided in 1913, the Standard Oil case will probably be used only minimally as a precedent by both the government and IBM in their legal arguments.

The cases are just too dissimilar for comparison, with Standard Oil as the archetypical trust firm, and IBM as the archetype of the modern industrial firm. And both sides admit the government's case is striking off in new directions in the history of antitrust law.

Several Precedents

There are ample precedents, however, that will be cited by both sides in the upcoming case – the Alcoa case, the United Shoe Machinery decision and the Grinnel Corp. case.

In addition, if IBM follows the precedent set in the Telex case, it will rely heavily on the DuPont Cellophane case in defense of its view of market definition – and if Telex is successful, the Justice Department might try to put some weight on the Volkswagen air conditioner case, which has not yet been heard by the Supreme Court, but which Telex pushed heavily in its case.

The Alcoa Case

The Alcoa case tells much about trying a large antitrust action and serves as a precedent for the present case: the trial lasted from June 1938 to August 1940 and the transcript of the court action ran to over 40,000 pages.

The case was appealed with the final decision reached in 1945.

The Alcoa case depended to a large degree on the market definition issue – just what is the relevant market for a product and what other products does it compete against?

It was undisputed that Alcoa produced around 90% of "virgin" aluminum sold in the U.S. But this ingot also competed against virgin ingot from overseas and against "secondary" ingot or ingot made from scrap aluminum, according to the Alcoa presentation.

Judge Learned Hand, writing the opinion for the circuit court, noted there are "various ways of computing Alcoa's control of the aluminum market – as distinct from its production – depending upon what one regards as competing in that market.

"The (trial) judge figured its share – during the years 1929-1938, inclusive – as only about 33%; to do so he included 'secondary,' and excluded that part of Alcoa's own production which it fabricated and did not therefore sell as ingot.

"If, on the other hand, Alcoa's total production, fabricated and sold, be included and balanced against the sum of imported "virgin' and 'secondary," its share of the market was in the neighborhood of 64% for that period.

"The figure we have already mentioned – over 90 – results only if we both include all of Alcoa's production and exclude 'secondary'," Hand said.

90% Enough

The question was important, Hand noted, because a 90% marketshare "is enough to constitute a monopoly; it is doubtful whether 64% would be enough; and certainly 33% is not."

Even though secondary aluminum competes to some extent against virgin ingot, Hand found that since Alcoa had the power to set the price of virgin ingot, that power in effect carried over to the secondary market, since it determined the price of scrap aluminum.

Similarly in the IBM case the Justice Department, in trying to limit the market to just the general-purpose computer market, will try to use the Hand decision to show that time-sharing and service companies are not in the market, since even if they compete somewhat with in-house systems, the IBM control over the computer market determines the prices that service bureau operators can charge.

Another argument made by Alcoa was that it did not make an unfair or monopoly profit from its position in the industry. But Hand found the exact profit margin did not really matter.

"The whole issue is irrelevant anyway," the judge said, "for it is no excuse for 'monopolizing' a market that the monopoly has not been used fo extract from the consumer more than a 'fair' profit."

Natural Monopolies

However, the judge noted that natural monopolies, or those gained by initiative or thrust upon the company, are not outlawed as such by the Sherman Act – in other words, bigness by itself is not outlawed.

The question, therefore, in the Alcoa case, he said, was one of whether it fell under "the exception established in favor of those who do not seek, but cannot avoid, the control of a market.

"It seems to us that the question scarcely survives its statement," Hand said.

To fall within the Sherman Act, Hand said, a monopolist must have both the power to monopolize and the intent to monopolize.

But he said if specific intent was required, that would make nonsense of the act since "no monopolist monopolizes unconscious of what he is doing."

At the same time, the court found many of the acts of Alcoa, while innocent by themselves, added to an attempt to monopolize the market, even though the actions themselves were in fact not illegal.

This argument will surely be heard in the IBM case, since IBM claims its market position is due primarily to "skill, initiative and foresight," and none of its acts was made in order to exclude competition from the market.

Think Fast, Spend Fast

LONDON – A new adaptation of an old adage is circulating here – "Spend in hate, repent at leisure."

Butonde Dawood deposited $15 into his bank account but a generous computer credited him with $15,000. Dawood promptly took advantage of his "good fortune," spending it in the space of two weeks.

The bank error has been discovered and Dawood has been released from jail – after promising to attend a bankruptcy hearing in court.

Editorial

Democracy by Computer?

As Gloria Guggino suggests (see letter below), major changes in our way of governing would be necessary to implement her idea of "democracy by computer."

The idea, while not new, may bear reexamining now that minicomputers and communications technologies can handle the job. During the 1972 elections, a candidate for U.S. Senate campaigned on a similar issue: his constituents could vote (by telephone, hooked to a computer) on every issue, and he would be required to follow their mendets.

The candidate never passed the primaries, and so his ideas were stifled, at least temporarily. The campaign, however, brought some of the problems to light.

For example, does "John Q. Public" have the time or interest to be fully informed on all the ramifications of e piece of legislation, or is he to be swayed by the opinions of the press?

Would vested interests, lobbyists, merely turn their attentions to advertising, rather than personal contact, in the halls of federal office buildings?

Technologically, what security safeguards would be implemented to assure (1) the privacy of the vote end (2) the prevention of "ghost" voters?

These are some of the problems. The issue needs more discussion from computer experts, es well as the lay public.

'I Wonder How It'll Wear'

DOS/VS Too Good? IBM Gives Insights

By Bennett I. Moyle
Special to Computerworld

Right from the beginning, IBM's announcement of virtual storage capability, additional partition support and other significant enhancements for DOS seemed too good to be true. Particularly from a company whose marketing strategy has been consistently aggressive – and brilliantly so – and generally transparent.

Since last August there have been more software and hardware announcements important to the DOS user. But there has been little comment from the vendor about the possibility that virtual storage implementation might have a degrading effect on central processor performance, or not perform acceptably without high-speed disk, or lure users into over-committing their machine resources as a result of excessive use of the programming freedom implicit in the concept.

At the Guide 36 Convention, IBM "dropped the other shoe." Actually, little new was introduced at the meeting, but the revelation of details and the review of previously available information in back-to-back presentations manifest IBM's plans for DOS installations. It unfolds something like this:

- The DOS/VS resident control program will require 45-55K of main memory in a practical environment, thus reducing the amount of memory available for additional partition usage and increasing the paging requirements.
- Power will be required to run in real mode, thus eliminating another 30-50K from pageable memory. More important, Power will only be operable in a multitasking partition when it is the main task, instead of a subtask as is presently permissible. This means that users wishing to share the Power partition will have to modify Power coding to include the mechanism for starting the other tasks.
- Two new access methods will be available, Vsam and Vtam. Vsam provides functional advantages over the sequential disk access method and an estimated two to one performance improvement over index sequential.

It will run in the Shared Virtual Area (SVA) of DOS/VS, which is a separate memory region where nonetrant programs may be concurrently used by more than one partition. Vsam's virtual storage requirement is 140K, but in "working set" requirement is 10K of real memory, plus I/O areas. Whether that means it will perform well in 10K, or just perform, is moot.

Vtam is a teleprocessing access method intended to supercede Btam and Qtam, and will be the primary support for the IBM 3704 and 3705 programmable TP controllers. It supports 3270 local terminals directly, and most other IBM terminals via the 370Xs, but conspicuously does not support 2260s.

Storage estimates are not available, but we are assured it will be operable on a 96K machine. Vtam will also be concurrently useable by more than one problem partition, but it must reside alone in a separate partition.

- The heavy marketing emphasis which IBM has placed on CICS is taking effect, and to be sure that its new customers will be able to take full advantage of virtual storage, a new version of CICS will be implemented.

A typical medium to large-size DOS/VS installation, then, will have CICS running in partition 4 with Vtam in partition 5 and Vsam in the SVA; Power will operate in partition 3 spooling the remaining two partitions (that's right, we're back to two batch partitions); the TP hardware will include 3270s and/or 370X control units; with a real memory commitment of approximately 80K for the control program and Power, (and estimating virtual partition requirements of 100K each for the batch partitions, 190K for Vtam, 180K for Vsam, and 200K for CICS), a 240K 135 CPU will be a minimum, and in most cases not a very large one. The faster 3330 or 3340 disks will replace 2314s for improved paging.

Strangely (or is it?), there's nothing functionally overwhelmingly different about the DOS/VS system described and many medium to large DOS systems. Those who were suspicious of IBM's generosity (was anyone not?) may rest assured – everthing is back to normal.

Moyle is a systems programmer at the Federal Reserve Bank of Minneapolis.

Letters to the Editor

How About Voting By Nationwide DP!

(see editorial)

Is it possible to set up a countrywide computer system for the purpose of voting on national issues? All voting results could be computated within a week.

For example, rather than have our congressmen in Washington give the final vote on health insurance, the man in the street would give the final vote.

Our congressmen would still be our representatives, evaluating and discussing the issues and bringing them before the people. But the final decision and the final responsibility would fall on the man in the street.

It sounds like such an awesome task in the beginning, but the results fascinate me.

What better example of democracy – self-rule.

Every man and woman of voting age would be able to express his or her own personal view on every national issue.

Although television has brought the government visually closer to the people, the average individual is still remote from the issues involved. Although he may be exposed to more workings of government, he is helpless to do anything about it.

Also in many many cases laws are passed which affect him personally but of which he is completely ignorant – through no fault of his own.

Government has no priority over the everday problems he must face. He leaves the lawmaking to his representatives but then becomes frustrated by the results.

If every individual had the opportunity to cast the final vote on all laws, he or she would naturally take more interest in the issues involved and frustrations would be tempered.

Gloria A. Guggino
Rochester, N.Y.

One User Finds Successful Combination

Page 54 of the June 13 issue of *Computerworld* carried an article titled "Word Processing + Communications + Data Entry = Multifunction Success." The article quoted George Bernstein, a National Computer Conference speaker, as saying, "No firm is yet marketing combination systems to the end user."

At Blue Cross and Blue Shield of Iowa in Des Moines, we have installed hardware for data entry and for word processing from a single vendor. The hardware in both systems is virtually identical.

John J. Smith
Dir., Special Services
Blue Cross-Blue Shield
of Iowa
Des Moines, Iowa

Codasyl's Problem— The So-Called Experts

In general, Codasyl keeps a low profile when it comes to getting involved in public controversy because our goal is to develop and contribute common data systems languages to the computing community.

Since we have no profit motive, there is little reason to use our resources in non-productive public bickering. However, it's a source of continuing amazement to me how some folks feel it's their duty to "help" a highly demonstrable and long-standing success such as Codasyl remain successful.

Accepting for a moment the erroneous assumption that it's the business of anyone else's but Codasyl as to how Codasyl operates, I must vigorously protest the completely misstated, misinformed and misleading attack on Warren Simmons and U.S. Steel [CW, June 13].

As one of the architects of the 1968 reorganization, I state without reservation that the allegations in the anonymous letter are totally incorrect. Our biggest problem is not Simmons who has contributed greatly and therefore left himself open to criticism, rather it is anoymous and non-anonymous writers who have never contributed anything to Codasyl and now feel they are experts, qualified to take cheap shots at an imagined Codasyl problem.

Anyone is welcome to criticize Codasyl, and its end products such as Cobol, to their heart's content – we'll stand on our accomplishments, past and future.

But to perpetrate such a scurrilous attack on an individual or company as a personal vendetta or for whatever other reason, is completely without justification and certainly outside the bounds of common decency, not to mention common sense.

John L. Jones
Chairman,
Executive Committee
Codasyl
Atlanta, Ga.

CW Bridges the Gap

After completing my tour in the Peace Corps in Malaysia, I have the following observation:

Your publication has been virtually the only link to the "now world" of EDP. Thank you for helping to bridge the gap of knowledge and understanding.

Joan A. Lim
Systems Analyst
Sturgis, Mich.

Its Real Policy Will Soon Be Defined

DOD Threatens, 'I Won't Play With Your Cobol'

The U.S. Department of Defense as the largest user and buyer of computers in the world has many powers. One power it should not have – and legally does not have – is to weaken the rules and procedures that surround the creation of new and revised American National Standards. Sometimes these rules and procedures are even invoked by the DOD in an attempt to stop something it does not like – such as the recent interference with the ANS Task Force efforts to do its assigned work on the interface standard recommendation. But when DOd has the power to do something on its own – well, that is another matter.

Last month DOD's representative, Wharton McGreer, found some of the rules were not agreeable. They might delay the approval of a new revised Cobol standard – DOD had successfully obtained some promises earlier (apparently from the ANS X3 and/or Cobol PLC committees) that approval should not be delayed by anything. Questions came up on whether the procedures had been followed or not.

And so, just as though ANS operations were a childish pest, a DOD representative got up, failed to talk about whether the regulations were or were not being broken, and simply talked about DOD's inconvenience if delay occurred – and its optional power and intention to create a private Cobol standard.

"I won't play with your Cobol if you don't let me have my way" was what he effectively told the committee. The only call to morality he made was on the morality of keeping to some secret agreement of last year – although the very existence of such an agreement also appears to be an infringement of the rules.

He got his way – with no discussion or objection from the computer manufacturers. Perhaps the manufacturer representatives thought it was not politic to argue openly with DOD in view of its buying power.

Or perhaps they realized the draft standard endorses their labelling proprietary products with hardware lock-in capability as "ANS Cobol." Or perhaps the manufacturer representatives simply knew the ANS power structure was such that nothing they said would be effective. In any event they said nothing.

Other Groups Also Silent

And the representatives of the general interest group, and the user groups did not protest. They did not object that they had only just seen the new items inserted into standard Cobol without public review (such as the collating sequence); or that they had not received any report of the non-technical comments on the standard (which CBema should have supplied – the Kearney Committee is only responsible for technical comments).

Nor did the other groups say they had not been given the opportunity to keep their organizations informed – which is one of their basic responsibilities under the ANS rules. Again, just why is not clear. But the fact remains – they said nothing.

Misplaced Gratitude Possible

It is possible that the silence grew out of a sense of misplaced gratitude. In the 1959-62 era DOD was the muscle which apparently pushed Cobol through, over the objections of IBM and others. But 1962 was a long time ago – and in any event quite enough credit for DOD's role as muscleman during those times has already been given.

It would be more appropriate for the silent ones to realize it was also DOD which tried to quietly wipe out the Cobol Report Writer last year, which still pretends that the restrictions on the distribution of the PLC minutes are based on cost, a pretention that enforces the improper secrecy requirement over proposals to change Cobol.

But the committee members apparently did not think of these factors. They kept quiet, and voted to proceed as the DOD representative clearly wished.

This was a pity – because in doing so they failed to discover just how much strength there really is behind the DOD representative's threat to play ball somewhere else.

In particular, they failed to define whether DOD policy is for its representatives on ANS committees to support the Ansi Constitution or whether DOD's representatives are authorized to throw the department's weight about to prevent matters from being considered.

The committee members failed to consider whether the new Cobol collating sequence rules are such that hardware independence is encouraged – or made unlikely – and whether X3 has the authority to add them after the public review cycle has ended without republishing. And they failed to ask how they can tell just what is the real policy of the department.

"We cannot afford any displays of irresponsible DOD power if we are to retain U.S. leadership in Cobol. (Look what happened to U.S. leadership in interfaces when equal irresponsibility was permitted to continue.) This is the picture that DOD is currently presenting."

Is This Department Policy?

It is important that we do find out, and quickly. If the DOD's real policy is to throw its weight about; to use secret negotiations instead of open, public argument; to talk threateningly about the consequences of opposing DOD instead of giving reasonable objections when time for consideration is sought; to refuse cooperation in providing information, to enforce secrecy by the purposeful destruction of committee documents, then any further participation by the department in standard affairs, or in Cobol, will have to be fought.

We cannot afford any displays of irresponsible DOD power if we are to retain U.S. leadership in Cobol. (Look what happened to U.S. leadership in interfaces when equal irresponsibility was permitted to continue.) This is the picture that DOD is currently presenting.

If, however, department policy is to work within the rules of the ANS Constitution, and to use its power to assure discussion to provide access to public information and to really represent the consumers – then we want the DOD around to help retain U.S. leadership. How can we tell which policy is real?

Policy Test

Luckily, despite the apparent indifference of the ANS committee members to this question, we will soon be able to tell just what the department's policy really is – as a result of DOD actions rather than public relations pronouncements.

The department will soon be voting upon whether to press forward with the Cobol standard. It will have three choices:

- DOD can simply use its power – and vote to push forward without explanations.
- DOD can vote the same way – but give its reasons for rejecting the allegations of non-conformance, requested in the name of ANS constitutional protection of the public.
- DOD can reverse itself, and vote to insist that the objections be answered *on their merits* before pushing the vote any further.

Three possibilities, all still in the future. We will know by the department's choice if it really believes in continuing to use the irresponsible childish-threat policy it seems to be following now.

And we will know how to counteract it, if necessary.

UNreliability the Key to IBM Class A Software

Generally a Class A system is one which is known to be good. Certainly it is better than a Class B or Class C system. IBM, however, does not conform to such a normal usage.

To IBM a Class A software product is one which is not yet reliable. When the software becomes reliable – if this ever occurs – then the classification "A" is no longer required.

The discrepancy between what people may expect from Class A software and what IBM provides was underlined in the 1973 spring response by IBM to a request from the Guide user group asking about the stabilization of System 360 operating systems.

IBM said that while the operating systems had been functionally stabilized at Release 21.6, it was still unreliable. Therefore, according to IBM, service classification "A" was still required.

To support this contention IBM pointed out there were over 1,000 fixes in OS Release 21.6, and that the 21.7 Release will also contain what it calls "a significant number of fixes."

IBM also put in, naturally, a claim on the VS1 and VS2 systems, as "a better base for providing extensions and additional facilities."

Apparently a Class A category on software must be regarded by users as a warning of unreliability despite support.

A better way to convey this warning to users would be to use a categorization that displays rather than conceals the problem – such as "Category Dangerous – Do Not Use Without Written Authorization."

And, of course, this applies with even more strength to the untried software as it comes out, without having years of field experience which the OS systems by now have obtained.

Taylor Thoughts

Letters to the Editor

RPG II Installation On Dead-End Street?

Just as many *Computerworld* readers have been doing, I have been following the weekly RPG-Cobol comic strip and thought I might as well chime in.

While many people on both sides have brought up good points, I haven't seen anyone address himself to what I see as a crucial area in evaluating any language. The arguments have basically centered around people productivity. This is a valid area of concern to any installation, but should not be an overriding consideration.

One of the main reasons for having a higher-level language is machine and operating system independence. Almost every .major manufacturer of equipment has an ANS Cobol compiler. RPG II, on the other hand, is marketed only by IBM, and then only for DOS users.

So you say you'll never need OS? I recently left an organization which in 1969 had a 32K Model 30 running 10 to 12 hours a day. It is currently installing a 384K Model 145 because it ran out of steam on a Model 135. Needless to say, it is converting to OS/VS1.

An RPG II shop would be hard-pressed to make such a conversion. OS RPG is definitely not RPG II. OS ANS Cobol, on the other hand, is OS ANS Cobol.

Software is an investment which should, by all means, be protected. RPG II codes and debugs a great deal faster than ANS Cobol, but if an RPG II installation is growing, it may be rapidly coding its way down a dead-end street.

James A. Rutherford,
Systems Engineer
Management Systems and Services,
Westinghouse Electric Corp.
Columbus, Ohio

Where Does Cobol Stand?

The recent "my language can whip your language" controversy between Cobol and RPG-II users is almost disgusting. Any true professional must admit that the selection of a language depends upon the application with due considerations for language availability, hardware, core requirements, etc.

I personally think Cobol stands about half way between RPG II and Fortran V. If you do not think so, solve 100 simultaneous non-linear differential equations in RPG II, or match and merge several disk, tape, and card files with Fortran or Cobol.

David Kinney
Director, DP

Southeastern Illinois
Electric Cooperative
Eldorado, Ill.

Committee Wrote Report

I am writing concerning an article entitled "Task Group Survey Finds Government Users Avoid Switch to Ascii" [CW, June 6]. As a member of TG-12 who has attended all meetings, I would like to point out the document referred to in the article appears to be the report of a working committee of TG-12 on the result of a questionnaire answered only by the government members of TG-12. It has been accepted by the whole task group only as a report of the working committee.

J.N. Hoffman
Supervisor, Programming
Eastern Air Lines, Inc.
Miami, Fla.

Professional's Viewpoint

Sound Policy Needed on Privacy and Data Security

The individual's right to privacy, an overriding consideration, involves basic policy questions – what personal information should be collected, by whom and for what purposes; and to what extent should information gathered for one purpose be made available for other purposes? Who should have access to what information, for what purposes and under what limitations?

The Computer and Business Equipment Manufacturers Association, in the intesest of greater public understanding of the part computers play in the collection and dissemination of information about people, has prepared a pamphlet, *The Role of Computers in Privacy, Confidentiality and Data Security*. The following is a brief summary of its viewpoint.

Copies of the complete pamphlet are available from CBema, 1828 L. Street N.W., Washington, D.C. 20036.

The problem of privacy was with us long before computers came on the scene. It has existed since people started keeping written records.

Automated techniques, however, potentially permit the storage and dissemination of so much sensitive information about individuals that without adequate safeguards several liberties can be jeopardized.

In a period when many organizational judgments about people affect many rights, benefits and opportunities, the accuracy of personal information is critical for the individual.

New Principles Arising

In the public controversy over such matters in recent years, three principles have growing acceptance – individual rights, functional restrictions and deletion of irrelevance.

Individual rights – When government or private industry places personal data on file, the individual should enjoy:

- Maximum access to the record containing the information about himself.
- The right to read and check the accuracy and completeness of the record.
- The right to contest the record in an appropriate proceeding.

There are some exceptions to this rule. Exceptions, for instance, could include certain criminal investigation files, where revelation could impede the course of justice. By contrast, if a file is used to determine rights, benefits or opportunities, it is particularly important that the individual enjoy maximum access to the records.

Functional restrictions – Another area of concern is where information is collected from an individual for a given purpose. It is now generally agreed that the use should be confined for the purpose for which the data was collected. If the collector – or some other holder of the file – wishes to use the information for an additional purpose, he should make that clear originally, or obtain consent later for the new use.

Deletion of irrelevant files – The relevance of specific items of information should also be established, or the items should be deleted from the file. Some record-keeping programs may not deserve to be continued at all. The indiscriminate transfer of information on individuals from one organization to another should be prohibited.

How can such protection be assured? Wherever information about people is collected (whether a computer is involved or not) human judgment must strike a balance between the right of an individual to privacy and the needs of society.

After such a balance is arrived at, the degree of confidentiality to be given to the information must be determined, and systems design for proper handling of the data. In this process computer manufacturers can be of major assistance in working with the computer users.

In view of the difficulties in protecting private rights, it may be asked whether automated data handling is worth the risk. Yet the computer, with its ability to handle vast amounts of data economically, has made feasible many new ways of benefitting society.

To select from literally hundreds of examples, computers can match job seekers with jobs, break up log jams of cases in our courts, provide automatic license renewal, improve public utility service and help transportation planners understand commuting patterns.

Organ Match

A computer system at a large medical center enables doctors to find vital organs for desperately ill patients. As kidneys and other organs become available, the system quickly searches the file and identifies patients with similar tissue characteristics. Tied in with transplant centers across the country, the computer system has matched available organs to recipients who otherwise could not have hoped for more than a few months of life.

Without computer systems, an effective Social Security program – which pays monthly retirement benefits to 22 million people – could not exist.

Law enforcement officials across the country are now using computer files to obtain information rapidly on stolen goods and wanted criminals – often in time to support new crimes.

In view of such beneficial uses, the question is not whether to continue using this new technology, but rather how to keep an extended benefit while preserving the individuals' rights to privacy and confidentiality.

Computerized systems are worth the risk.

Overall the issues of privacy, confidentiality and data security call for a universal responsibility from those with a stake in private information. Whether they are computer users in government, or in industry, legislatures, government agencies concerned with the laws, private citizens or computer manufacturers, all share an obligation to help shape the prudent public policies that society will need for the years ahead. Technical programs by themselves cannot do the necessary job.

Computer Eyes Eye Test

BERKELEY, Calif. – The University of California's School of Optometry has designed and clinically tested computer models to assist optometrists and ophthalmologists with eye examinations.

The computer will handle history, visual acuities, performance of objective and subjective refractions and other tests. The computer recommends a prescription based on its findings.

Random Notes

RT-11 Supports Libraries, Fast Throughput on PDP-11

MAYNARD, Mass. – DEC has a new single-user operating system for the PDP-11. The RT-11 real-time system supports tape-based data and program library functions, editors, on-line debugging, a peripheral interchange program, the Macro-11 assembler and, optionally, an extended Basic processor.

RT-11 utilizes a contiguous file structure which, DEC claimed, provides "extremely fast" throughput. It can be used on a PDP-11 with 8K of memory, dual mag tape drives and a teletypewriter. It is available under license for $750.

DBOMP/BMP Link Sought

NORWALK, Conn. – An interface package is being developed by Turnkey Systems, Inc. (TSI) to link IBM's DBOMP and BMP file-handling systems with TSI's Task/Master telecommunications monitor.

Scheduled for the end of the year, the interface would permit on-line maintenance of DBOMP/BMP files concurrent with on-line multithread operation of application-oriented tasks.

Any release of DBOMP or BMP will be supported, and no changes in the IBM-provided systems are required. DBOMP & BMP programs will have access to the full range of Task/Master facilities, a TSI source said, from 111 Fast Ave., 06851.

Routines Get 'Starter Kit'

BOSTON – Cullinane Corp. is now providing users of its Personnel-EDP-Reporter retrieval/reporting system with a "starter kit" of routines needed to generate reports commonly used by personnel departments.

These include EEO minority hiring reports, turnover matrices and displays of the effect of a given percent salary increase, as well as miscellaneous category breakdowns, tax summaries and labor cost analyses.

The Personnel-EDP-Reporter package costs $15,000 for a two-year period and $2,500/yr thereafter. Cullinane is at One Boston Place, 02108.

Back Office Operations in Business

BEVERLY HILLS, Calif. – A software package to provide on-site "back office" operations for brokerage firms has been developed for Singer's System Ten computer by Cantor, Fitzgerald Computer Services, Inc.

It will handle cashiering, margin computation and surveillance, and inventory profit and loss.

The software will be maintained and updated on a continuing basis and is available for $20,000 to $25,000 under license from Cantor, Fitzgerald, 232 Canon Dr., 90201.

User Sells DOS 'Building Block' Routines

By Don Leavitt
Of the CW Staff

SOUTHFIELD, Mich. – A whole "bag of tricks" for DOS/360 users – subroutines, utilities and system management programs – is now available from Cogitate, Inc.

Some of the new offerings seem simple "building block" facilities that could be used – and developed – at several installations. But who can justify writing a Julian day-to-calendar date conversion routine when Cogitate is giving one away?

There are more sophisticated programs in the collection, however. These include an in-core spooler that allocates, dynamically, whatever core is available for print buffers so the application program producing a report can execute without being delayed by the relatively low-speed printer.

The spooler is one of Cogitate's major packages and is priced accordingly. "We'll probably charge about $100 for that one," a spokesman said.

Other software includes an internal sort subroutine which utilizes a "shell" sorting algorithm for sequencing in-core tables and related information.

Otherwise, a set of EXIT routines enables IBM's DOS sort to select records to be sorted from a file that includes unwanted records as well; to read 1400-series tapes; and to accept input for the sort directly from the card reader.

A generalized, control card-driven, card edit program goes beyond the classic checking of fields for alpha or numeric data as appropriate.

The Cogitate editor also includes column and field tests for specified literals. These tests can determine either the presence or absence of the given value, or whether the card value is greater than the test value. Coding such tests in Cobol would be possible but "extremely awkward," a company source noted.

Another Cogitate routine is a tape rotation sequence check which compares first creation dates, then file number, on input and output tapes before attempting an update. This appears to use simpler and faster logic than IBM's label checking, but "isn't a big deal," so it carries a $10 price tag.

Cobol users can work directly with bit-level logic through another little package, for $20.

There is no maintenance offered with any of the items in Cogitate's "bag of tricks," a spokesman said, from 24000 Telegraph Road, 48075.

New 370 Simulation Buoys 360 Users

JERSEY CITY, N.J. – New support for "backward compatibility" – the ability to execute special 370 instructions on the 360 – is now available with the release of a 370 simulator from MHT Services, Inc.

This package appears simpler than the earlier offerings from Itel and The Computer Company [CW, June 6]. MHT supports only the 370 instructions that are pertinent to problem program logic. No attempt is made to handle new system-type instructions, or – in the DOS version due later – to support the use of DOS Release 27 on 360 equipment.

Even with this resitively simple implementation, however, 370 simulation appears to offer new life to the 360, allowing it to be used, for example, as backup for a 370. With backward compatibility, users operting mixed 360/370 installations will be able to swap application programs freely between CPUs.

As with the earlier simulation packages, the MHT software comes into play when the 360 attempts and fails to execute a 370 instruction. The simulator substitutes a set of valid 360 instructions to accomplish what the unacceptable 370 code would do.

The speed of a program using simulated instructions will vary with the frequency of their use and whether the program as a whole is compute-bound.

An OS/360 version of the simulator package is ready now; a DOS implementation is scheduled by late summer. Marketing arrangements are still not complete, but MHT expects that either version will be priced "under $1,000" per CPU, on a one-time charge basis.

MHT Services, Inc. is at 270 Henderson St., 07302.

Partitioned Data Set Members Accessed by Cobol Interface

TROY, N.Y. – Users writing in Cobol for an OS/360-370 environment can access more than one member of a partitioned data set during a given program, through an interface program recently introduced by Digital Solutions.

The interface permits the Cobol programmer to describe a partitioned data set as a standard sequential file. A subroutine call, executed prior to the OPEN statement for the file, selects the member to be processed. The selected member may then be opened and used as any conventional file.

Additional facilities are also available to the user "primarily because we needed them to handle the basic job of the interface," a Digital source said.

These features include the ability to determine, for example, whether the selected member already exists, whether the file is already open and, if so, which member has been selected.

The system is distributed as an object deck which is made available to the OS loader at execution time, or to the linkage editor. It functions under either the MFT or MVT options of OS/360.

The interface operates with various IBM compilers, including Cobol E and F, and ANS Cobol Versions 2, 3 and 4, and with the Fast Cobol compiler released last year by Computer Linguistics, Inc., a software house that works closely with Digital Solutions.

The interface is available for a one-time license fee of $250 which includes a programmer's manual, installation instructions and sample programs. Source code is available for an extra charge, the company said.

Digital Solutions can be reached through P.O. Box 424, 12180.

'Hex' Displays Aid Test Session

ROCHESTER, N.Y. – Users on any byte-oriented machines can cut down on the amount of effort needed for program testing, error debugging and record checking with the hexidecimal display utility program from Information Associates, Inc.

Hexdsply prints the contents of any specific data element in both character form and hex notation. This decreases the likelihood of finding non-printable or otherwise unusable garbage in either input or output data, a company source said.

Typically, the utility is used in place of a conventional write routine and each record of a file being genersted is directed to the printer instead of tape or disk, during the early stage of program checkout.

Hexdsply is written entirely in ANS Cobol for use with any operating system on a byte-oriented CPU. It requires approximately 3K bytes of storage, and costs $400, which covers training, source code and installation support.

Information Associates is at 20 North Union St., 14607.

COMMUNICATIONS

Data Briefs

Penril Modem Features Auto Answer on Dial-Up

ROCKVILLE, Md. – Penril Data Communications, Inc. has introduced a 2,400 bit/sec Bell 201B-compatible data modem intended for the dial-up network.

The 2400B-1 automatically answers calls received on the dial network, has a call-abort timer, a 1,200 or 2,400 bit/sec selectable data rate, instant synchronization, instant carrier recovery, rapid response and a set of diagnostics.

The diagnostics enable the operator at one site to test the local modem, remote modem and interconnecting telephone lines, all under control of the one site. This allows non-technical personnel to isolate communication system faults to the transmitter or receiver in either modem, the forward or return telephone lines or the terminal equipment at either site, the firm stated.

Penril's 2400B-1 data modem costs $1,475. Delivery is 30 days from 5520 Randolph Road, 20852.

Adapter Is for 2-Way Conversion

RALEIGH, N.C. – The Comware Division of Terminal Communications, Inc. is offering a printed circuit adapter that provides two-way conversion between an EIA (RS-232) interface and a direct current neutral telegraph loop.

The receiving circuit, called a telegraph self-adjusting relay (Tsar), eliminates the need for bias resetting and provides essentially unbiased signal detection.

The telegraph loop adapter cost $52.70 with delivery in 30-45 days from P.O. Box 37228, 27611.

Consultant Expands to Support

WALLINGFORD, Conn. – Northeast Services, Inc., which offers a consulting service to data preparation/communications users and manufacturers, has expanded into supplying intelligent terminals, printer terminals, modems and multiplexers.

All equipment will be available to the end user on purchase, or through Northeast's rental leasing plan.

The units supplied by Northeast have nationwide service available. The company's main office is at 34 Highland Ave., 06492. Its support personnel serve New England, New York, New Jersey and Pennsylvania.

IBM Buys Anik 2 Channel

OTTAWA – IBM will use Canada's Anik 2 communications satellite "to test various digital communications techniques."

IBM will pay RCA Global Communications $436,000 for use of a leased satellite channel and a portable ground station.

First 3760 User

Front End Helps Network Efficiency

By Ronald A. Frank
Of the CW Staff

CONCORD, N.H. – "There was some risk in being the first user, but we took the chance."

That's the way Art Di Prete, director of computer services at N.H./Vt. Blue Cross-Blue Shield, described his decision to install a front-end communications processor.

Di Prete selected a Univac 3760 communications controller to interface with his dual 360/50s and replace an IBM 2702 line controller. The 3760 emulates the 2702 and provides additional support that has allowed Blue Cross to upgrade a communications network to handle administrative computing for 13 hospitals in New Hampshire and Vermont.

The hospitals serviced by Blue Cross were using IBM 1050 terminals with 1056 card readers. The system was operating under Qtam, which supports only slow-speed start/stop terminals, Di Prete said.

Upgrade to Buffered Terminals

With the addition of the 3760, the Blue Cross network has been able to upgrade to DCT 1000 terminals which are buffered and can be used in multidrop configurations.

With the earlier 2702 controlling the 1050s, Blue Cross was restricted to four drops per line because of limited capability of the line adapters.

But with the Univac equipment, Di Prete said he can handle seven drops per line. This increased capability has led to a line cost reduction of about 30%, the DP manager estimated.

The savings has averaged between $900/mo and $1,200 and most of this has been in line costs to the phone company. A savings of $400/mo was based on the elimination of overtime charges being paid to IBM for the 2702.

In addition to handling more locations per line, the DCT 1000 terminals operate at twice the speed of the 1050s. Although the DCT 1000s were about $10/mo more than the 1050s, they can handle double transmit speed (from 15 char./sec to 30 char./sec) and are three to five times faster on card operations, Di Prete said.

At one location in Rutland, Vt., the hospital replaced dual 1050s with a single DCT 1000, mainly because of the increased terminal throughput.

With the additional capabilities, the Blue Cross monthly bill for the 3760 dropped to $1,300 compared with the $1,600/mo being paid to IBM for the 2702, Di Prete said.

The 3760 polls each of the 13 terminals in the net. The system operates in half-duplex mode over voice-grade private lines and transmits data at 2,400 bit/see. Blue Cross is using 201B-compatible modems from International Communications Corp.

Before selecting the Univac front end, Di Prete said he went to the vendor's Salt Lake City facility where a prototype unit was operating with IBM 2260s and 1050s all hooked to an IBM 360/40. Seeing the prototype 3760 operating with IBM equipment assured him the unit would work in his system, the user said.

The 3760 was first installed in April and it took about three weeks to get the unit into operation.

Although "we had all the support we could ask for," some problems did arise, according to Di Prete.

In one case the channel stopped polling the outlying terminals. This was a software problem.

It was also difficult to get the 3760 to recognize an EOT character at the end of a card batch transmission. The net result was that the front end was unable to send an acknowledgement to the remote terminal listing how many card image records had been received, he said.

Asked if the switch of terminals caused any problems to the operators at the remote locations, the user said there was very little instruction needed.

CW Photo by Ronald A. Frank

Art Di Prete Checks 3760.

In most cases a field representative was sent to each hospital to instruct the operators. But in one case "we brought up an operator on the DCT 1000 by telephoned instructions" with few problems, he said.

Three POS Terminals Planned For Bank Card Network Test

By Patriek Ward
Of the CW Staff

CLEVELAND – Bancsystems Association, a Cleveland-based Master Charge processing center, plans to introduce point-of-sale terminals at several Northeast Ohio retail outlets this fall.

Three different types of terminals, geared to the different needs of merchants, will be used.

2 Bell Terminals

One of the terminals will be Addressograph-Multigraph's Amcat, which is geared to high-volume retail discount outlets. AT&T will furnish the other two terminals as part of a product evaluation program. Both are for low- and medium-volume general merchandise stores.

All three kinds of terminals will go on-line to the Bancsystems central computer in Cleveland this fall.

Both of the AT&T terminals offer a phone-line response system through the Bancsystems Authorization Center and like the A-M terminal eliminate the need for verbal conversation between the center and sales clerk.

With the more automated Bell unit, the sales clerk inserts the customer's magnetically striped card which activates the terminal's telephone hookup with the authorization center.

30 Second Answer

The clerk next enters the sales amount by keying the regular Touch-Tone phone keyboard. The center then automatically responds back to the store terminal with its approval or disapproval of the transaction. It is all done in under 30 seconds, according to Bancsystems.

Bell's other terminal requires the clerk to first insert a magnetically coded merchant card.

While the terminal is automatically dialing the Bancsystems Authorization Center and reporting the merchant's identification number, the clerk inserts the customer's Master Charge card and enters the amount of sale via the Touch-Tone phone. The computer gives out its verbal yes or no within a few seconds, Bancsystems said.

Private Line

The A-M unit has a private line directly to the Bancsystems computer. It can input variable data and automatically imprint that data on a sales transaction slip. It will also record the transaction authorization code and the merchant's identification, all in under 10 seconds.

The three terminals provide a computer check against purchases with fraudulent or stolen cards and can also prevent customers from making a transaction beyond their line of credit. All three could be used eventually to verify personal check purchases, according to a Bancsystems spokesman.

The A-M unit will process transactions with both magnetically encoded and conventional Master Charge cards. A spokesman indicated, however, that the association's 179 member banks will issue only magnetic striped cards in the future.

Communications Subsystems Released

Prime's Virtual Memory Mini Runs With DOS, RTOS

By a CW Staff Writer

NATICK, Mass. – In a triple announcement, Prime Computer Inc. has expanded its offerings to minicomputer users to include a new top-of-the-line "virtual memory" minicomputer, a line of communications subsystems and a series of data acquisition and control systems.

The Prime 300's major features include virtual storage, supported by a semiconductor main memory – up to 256K words – and a disk subsystem with a storage capacity of up to 50M words.

Memory speed is 600 nsec with a central processor speed of 200 nsec.

When operated under either DOS/VM – a virtual memory implementation of the Disk Operating System – or RTOS/VS – a virtual memory implementation of the Real Time Operating System, main memory is dynamically organized into small blocks called pages.

This permits programs to be divided into small portions with active portions residing in real memory and the inactive portions on disk.

A memory management system swaps pages between the disk subsystem and main memory so users can run multiple simultaneous jobs.

Prime has taken a hardware approach to providing the virtual memory techniques with features such as address translation, detection page faults, page protection and detection of restricted instructions built into machine architecture.

User applications of virtual memory could range from in-house time-sharing to manufacturing control and communications.

Program software is compatible in both directions with other members of the Prime family (models 100 and 200); thus a program developed on a 300 can run on either a 100 or 200.

Users upgrading from either a 100 or 200 can run their programs on the 300 with no software modifications required.

Basic configuration of the $12,500 Prime 300 includes virtual memory capability, 8K words of MOS memory, byte parity, eight direct access channels, hardware multiply/divide, automatic program loaders, asynchronous serial communications interface, console and 64-level vectored priority interrupt system.

Each additional 8K words of memory costs $4,500. A floating point option is available for $2,000.

To effectively operate under DOS/VS a user would need a machine configured with 32K words of memory; RTOS/VS could be run on the basic 8K-word processor.

Three communications systems for any Prime minicomputer are designed for applications requiring multiplexing/concentrating/switching, store and forward, distributed processing and front-ending. Control is provided for synchronous and asynchonous lines as well as for auto call units.

Two versions are available with the Asynchronous Multi-Line Controller (AMLC): one for direct connected devices and data sets with one control and one status function per line, and a second for data sets with full controls and connector panel.

Prices for the direct connect are $2,000 for an 8-line board, $3,000 for a 16-line board. With full data set control, prices are $3,500 and $4,500 for eight and 16 lines respectively.

The Multiple Synchronous Line Controller (MSLC) provides full control for 201/203 data sets (FDX or HDX).

Prices range from $1,600 for a one-line board to $2,800 for a four-line board.

The Multiple Auto Call Interface (Maci) allows the minicomputer to control four each 801-type automatic calling units and initiate a call to any telephone in the direct dialed network.

The Maci costs $2,000.

When configuring a system, additional AMLC, MSLC and Maci boards may be used to expand the number of lines required.

For Industry and Laboratory

Four data acquisition and control system (DACS) products are software-programmable and may be expanded by plugging in additional boards.

The Model 6000 is a general-purpose analog-to-digital conversion system which offers differential multiplexer control for up to 64 channels. Sixteen channels are implemented on the basic system, which sells for $3,000.

The system includes I/O interface for programmed I/O or DMA/DMC operation. Software support includes a Fortran driver callable under the real-time operating system.

The Model 6020 is a digital input system providing 64 differential, photo-isolated inputs organized into four groups of 16 inputs each.

The basic system, which includes two 16-bit binary up counters for pulse counting, sells for $1,500.

The Model 6040 is a digital output subsystem providing 64 buffered, photo-isolated outputs.

The basic system, which sells for $1,400, includes one programmable output counter for developing pulsed outputs of varying number, frequency and width.

The Model 6060 is a digital-to-analog conversion subsystem providing two 10-bit analog output channels.

The basic subsystem, which sells for $1,300, may be expanded to four 10-bit channels.

Prime Computer, Inc. is at 23 Strathmore Road, 01760.

Is Supercharged 155 Faster Than 158?

STAMFORD, Conn. – IBM 370/155 users can obtain faster memory and an accelerated storage adapter from Computer Investors Group (CIG) that is said to allow their 370/155s to run faster than a 370/158.

In announcing the 155/Plus system, CIG has taken its previously announced Model 155 replacement memory (cycle time of 850 nsec compared with IBM memory cycle time of 2,070 nsec and added an accelerated storage adapter (storage access time of 1,035 nsec to replace the IBM storage adapter with 2,070 nsec access time).

By doubling the speed at which the storage adapter can handle data coming from main memory, the CIG 155/Plus system effectively doubles the speed of all operations that are tied to main memory, according to CIG.

This dual component speedup gives Model 155 users a machine that reportedly is as fast as the Model 158.

In terms of actual throughput, the supercharged 155 may be faster than a comparable 158 because of the slower operation of virtual memory operating software.

The memory portion of the offering – up to 4M bytes – will be available in November. The accelerated storage adapter portion will be available in March of next year.

Both portions are field-installable with CIG providing the necessary maintenance.

Cost of the memory and storage adapter will depend on the configuration ordered, but a spokesman for the firm stated that the purchase price for a 2M-byte system will be on the order of 50% of the IBM price with lease rates running from 40% to 50% of comparable IBM prices.

CIG is at 1351 Washington Blvd., 06902.

155 Weakness Counteracted by CIG Features

By Michael Weinstein
Of the CW Staff

The significance of the CIG accelerated storage adapter and faster memory for the 370/155 is that it counteracts a design weakness of the unaltered IBM system.

The basic design of the Model 155 incorporates a central processor that cycles at 115 nsec and a main memory that cycles at the 2,070 nsec rate.

In order to compensate for the differences in speed of these components, IBM placed the storage adapter and a fast intermediate buffer storage (cycle time of 60 nsec) between the CPU and main memory.

In operation on an unaltered 155, as each fetch is requested by the CPU, 16 bytes are brought into the storage adapter from main memory. The storage adapter then forwards the four bytes requested to the central processor and simultaneously stores the entire 16-byte block in the storage buffer for temporary storage.

The purpose of this buffer (cache) memory is to increase throughput by bypassing the slower main memory whenever possible.

Analysis

Subsequent fetches are faster if the information is contained in the 60 nsec cycle time buffer memory.

The percentage of time the CPU can go directly to the buffer, instead of having to wait the 2,070 nsec needed to go into main memory, is known as the "hit ratio."

CIG acknowledged the hit ratio is highest in scientific applications such as those using Fortran, while benefits in a Cobol application would be less.

But even in the best case, where all fetches are sequential, the buffer is set up so that each 32 bytes of buffer memory are slaved to a partition of the main memory.

After these 32 bytes are used, the system must still go back to the slower main memory to refresh buffer storage. It would take two 2,070 nsec cycles to fill this buffer section.

The previous CIG announcement offered a faster memory, but this IBM replacement was still slaved to the access speed of the storage adapter.

In other words, it did not matter that the CIG/155 memory was more than twice as fast as the IBM-supplied memory – it still had to wait on the storage adapter which handled data at the 2,070 nsec rate.

But the addition of the CIG storage adapter – when combined with faster memory – has the effect of doubling the rate at which information can be either fetched or stored from or to main memory.

Best Advice for Potential DPers

Check the 'Promises' Against the Local Job Market

By G. Tim Hagen
Special to Computerworld

PORTLAND, Ore. – Would you like to have an "unlimited future," be "literally fought for by employers," start with "no experience . . . as high as $6,000 to $7,000 a year," and as "a five year veteran (at age 25 or so)" have a good chance to "draw $14,000" in a job "most anybody" can do?

These quotes from mass media advertisements of private educational data processing and computer programming courses seemed too good to be true so a study was undertaken to determine whether it was reasonable to suggest that this advertising might be exaggerated to an unethical extent. Some secondhand knowledge concerning the job market and former students of data processing courses indicated that this was a good possibility.

A preliminary survey of personnel departments and private and state employment agencies in this area indicated the DP job market might not be as rosy as portrayed in the advertising. But a follow-up survey of the educational institutes themselves seemed to cast doubt on the results of the personnel office study.

The first study was based on printed material obtained from the three major private educational institutions which teach data processing. One brochure contained a list of 142 organizations claiming to have hired the school's graduates.

Fifteen large and diverse companies were selected and their personnel offices telephoned, the caller claiming to be a recent programming graduate ready to embark on his "unlimited future." In addition, calls to four private employment agencies and the Oregon State Employment Office revealed some interesting data.

A person without paid experience is usually classified as a trainee by employment agencies and employers. None of the four private employment agencies said it had a trainee job and all stated the job market for trainees was very bad. If a trainee could get a job at all, it would probably not be in programming, the survey found.

When asked whether they would encourage a friend to pursue programming education, two of the agencies said no and two gave no answer.

Two calls to the Oregon State Employment Office revealed a total of three jobs, all of which required at least a year's experience. The survey also found few such jobs are available through that agency.

The 15 personnel offices which had been advertised as hiring DP course graduates yielded a total of one job which required two years' experience. Only three of the offices said they hired programmer trainees at all; two had hired one each in the previous year, the third none.

In the previous year the offices said they had hired nine experienced programmers and three operators, one of whom had been a trainee. Twelve of the offices said they hired data processing related personnel, especially keypunch, and preferred but did not require experience. One company hired out its data processing. Three others did their data processing out-of-state.

In a subsequent survey, the presidents of the private educational institutions pointed out that hiring of their students was not done through personnel offices, but rather through calls to them by data processing managers. They pointed out that if they did not deliver, they would stop receiving calls.

The presidents produced a list of graduates so hired, some by companies the survey had called.

The author does not suggest that private educational institution advertising of data processing courses is unethically exaggerated on the basis of information presented here. The author wishes to make perfectly clear that educational content and quality are not addressed here, except to point out that all the institutions discussed are accredited by national and/or state organizations, and for veterans training and federally insured student loans.

It is the author's opinion, based on personal experience, that private educational institution and community college courses probably prepare the graduate better for data processing jobs (as distinct from management) than do state supported degree programs in computer science, and that is indeed as it should be. The author wishes further to make clear that he does not wish to discourage anyone from pursuing computing education in any form from any institution, or to in any way close or limit the data processing and computer communities.

The results of the survey suggest:

- Any prospective student of data processing should be advised to seek information concerning the job market, from the educational institutions he is considering and from businesses at which he plans to apply for employment.
- Full disclosure be made to any prospective student of the true employment situation and alternatives presented to him.

DP Deployment Aids Police Efficiency

LOWELL, Mass. – Police here are experimenting with electronic data processing to help stop thefts by more efficient deployment of policemen. Information on where crimes happen, the time of day and date they occur is stored in a computer which then determines crime patterns.

Capt. Richard A. Cullen, chief of detectives in Lowell, said the project "has a great deal of merit." He was impressed with an experiment in which the computer suggested where and when to place electronic surveillance equipment in stores. Three breaks within six weeks were spotted, resulting in convictions of eight people.

The basic tool of the Lowell program is an Avco Systems computer in a nearby town. An Avco team divided Lowell into designated areas for coding purposes, then collected and processed local crime information.

From the information gathered – involving past and present crime – the Avco team determined what areas were most likely to be hit, and then suggested more efficient ways to use the city's 170-man police force.

Virtual Memory Drawbacks Substantial?

Special to Computerworld

NEW YORK – "It has always been hard to get at job costing in computers but with virtual memory it becomes almost impossible," Stephen P. Kelder, senior consultant at Neoterics, told a Talcott Computer Leasing Co. users group here recently.

Users should be careful about entering virtual systems because "your first use of virtual memory is like the first time you take heroin," he said. "It's very easy to get into, but it is distinctly hard to withdraw from.

Kelder, who has been working with the IBM virtual systems since 1964, and who for many years was with IBM, pointed out that the theoretical economics of the system were based on the idea of saving memory costs, while utilizing unused central processing power.

Nowadays, he pointed out, the costs of central processors seem to be skyrocketing while the costs of memory are coming down and, according to IBM, will be going lower later in the decade.

The problem of evaluating virtual systems was brought out at the meeting by Donald Harder of Computer EKG, who showed performance traces of a number of virtual memory systems in operation and the results of some comparative analyses he had performed between the actual operation of the systems and the details provided by the IBM accounting system, SMF.

In Harder's analysis of the actual performance of the hardware, he noted that on the 145 virtual system a knee in the curve occurred 55% of the time being used for problem processing. At this time, the rate at which page changes had to be made jumped at an almost exponential rate, he observed. Therefore, he concluded, 55% of the actual power of the system is the most users of VS/1 on the 145 can get.

Computer-Administered IQ Tests May Bypass Racial Differences

By Ken Shonk
Of the CW Staff

ALFRED, N.Y. – Interactive, computer-administered tests may be a major breakthrough in measuring the intelligence attributable to cultural or racial differences, according to Professor Douglas Johnson of Alfred University.

"What we demonstrated in our recent pilot study," Johnson noted, "is that you can administer a test such as the college boards as they are normally given – with an administrator – and find the differences in intelligence that most research today finds. Very simply, blacks do significantly less well than whites.

"You can then take the same group of people and have them take a correlating test on a computer terminal with interactive capabilities and the results change.

"While performance stays the same, but black performance improves to the point where it is nearly equivalent to white performance. The change demonstrates that the testing situation can manipulate the test performance of specific cultural groups up or down."

The improvement in black performance seems to come because computerized testing circumvents several problems in measuring IQ differences, Johnson stated.

"The computer bypasses the issue of tester-tester relationships, which can involve racial, cultural and socioeconomic overtones. People of a lower socioeconomic background can become especially anxiety prone when someone of a higher background evaluates them. Computerized testing does not, however, affect the possibility that the tests themselves are culturally biased."

"Interacting with a computer terminal is also intrinsically interesting," Johnson theorized. "The interest then carries over into a motivation to do well on the test. This factor can change the difference in test scores between blacks and whites, since whites are typically socialized to perform well on tests."

"With the small sample size we worked with, we really can't draw any definite conclusions," Johnson stated, "but the idea that I set out to test, that computerized testing could have an influence, is certainly worth more investigation. Next we'd like to expand the research to include a broader range of cultural and social groups. We'd like to test various culture-free tests, many of which involve a lot of work with geometric design.

In the pilot study the researchers administered two correlating tests, two versions of the Scholastic and college Ability Test (Scat), to each of the 20 subjects, 10 black and 10 white seventh and eighth graders from a Rochester inner-city school.

Each subject took one of the tests in the normal manner and the other on the computer terminal.

On the computerized test white performance essentially remained the same as on the normally administered test, verbal performance improved slightly and quantitative performance improved slightly.

Black performance on the verbal portion of the computerized test improved to the point where there was no significant difference between whites and blacks. On the quantitative portion black performance improved slightly, but there was still a significant difference.

"Computerized testing can also have significance beyond its impact on racial intelligence testing," Johnson asserted. "With computerized testing the tester can keep track of the time an examinee takes to answer a question, the track he takes through a test and a record of the incorrect choices."

Johnson's pilot study worked with a Datel terminal acoustically coupled to a time-shared IBM 360/65 at the University of Rochester.

Computer Spots Loafers

TORONTO – "Beware the computer" is the password around the Metro Toronto and Hamilton Unemployment offices.

About 20,000 people have been disqualified or threatened with disqualification from receiving their unemployment insurance benefits in the past two months due to the vigilance of the Unemployment Insurance Commission's (UIC) computers.

The UIC uses a computer code that identifies a claimant's occupation. By matching the number of unemployed people in a given category with the number of jobs available in the claimant's residence area, the commission is able to determine whether the people are actively seeking employment. Anyone not registered with a federal Manpower office or their union, or not actively seeking employment is automatically disqualified.

Today, you can pour lots of money into a company's computer operation.

A large corporation can easily spend over 30 million dollars a year. Even a medium sized company can spend several million dollars a year to generate and process data.

It's not just the cost of the computers. It's also the vast amount of peripheral equipment you must lease to run your computers efficiently.

For example, a popular big system rents for $36,990 per month. Just the computer.

Add on the needed peripheral equipment and your monthly rental has almost doubled to $63,000.

So while a lot of dollars can go into computers, what comes out is something else again. We've found most companies use their computers very inefficiently, at only about 35% of capacity.

How to tell if you're being "robbed."

If you suspect your computers aren't as productive as they should be, consider a program we call "Survey."

Survey is a unique software system that runs on your computer. Within a week, this system can determine if you need all the computers you're paying for.

Survey looks at your system every 15 seconds to see what's being used. It produces a daily print-out of activity of each of the major pieces of equipment charting busy times and slow times. It shows you the usage of each equipment grouping and it also gives you an overall rating of your system.

Based on this information, you can plan your equipment, workload and people more efficiently.

You can buy Survey or we'll rent it to you along with a man to run it. And since it takes only a small amount of core capacity, it doesn't interfere with any on-going operations.

How to tell where the money has gone.

If you have a lot of different operations using your computers, you also might be interested in another program we offer called GO-PAC.

This system does two things. It tells you the characteristics of each job and the time it took to run it.

With this information you can bill each user for his exact share of the operation.

GO-PAC's graphic print-out enables a data processing manager to improve scheduling. (GO-PAC showed one company that most of its people worked days while most of its computing was done at night.)

Other ways to keep your computers honest.

We have a 1,200 man operation that can help get more out of your computer investment in a number of ways.

1. We can evaluate your peripheral equipment and tell you who, other than IBM, offers the same for less dollars. (This year, after evaluating our own peripherals, we saved over $250,000 in tapedrives alone.)

2. We can take your overload and run it for you on our computers at surprisingly low costs.

3. We'll save you money on application software. We operate on a one-time, fixed-price basis. Something you'll appreciate as in-house software systems often cost 2 to 3 times the original estimate.

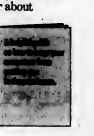
4. We've also developed a unique hardware/software system that breaks a common bottleneck in many operations. Called COPS, it features a cathode ray display that allows your computer operator to know at all times what's waiting to go in your machine and what's in there already.

Send for a booklet on self-preservation.

For more information on our services, send for our "helpful guide on how to keep your computers from putting you in the poorhouse."

It can make you a lot smarter about computers and could save you a lot of money.

If you're in a hurry, we'll be glad to send one of our people along with the booklet. Call or write: Walter Wood, Grumman Data Systems, 1111 Stewart Ave. Bethpage, Long Island 11714. Or call (516) 575-2588.



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SIG/SICs Gather

ACM Views Computers in Business

ATLANTA – "Computers in the Service of Man" is the theme of ACM '73 to be held at the Regency Hyatt Hotel here, August 27 through 29.

"This conference is a serious attempt to create an atmosphere for dialogs among the many individuals engaged in resolving issues relating to the intelligent uses of computers in serving mankind," said Irwin E. Perlin, ACM '73 chaiman.

The technical program will represent a balance between theoretical presentations and business data processing applications. Some 15 sessions will deal with topics relating to insurance, banking, transportation, and other business applications.

Of special interest to business-oriented attendees will be two panel discussions – "Current Progress: Future Trends in Automated Payment Systems" and "Electronic Payment Systems." Papers of interest include "Controlling EDP Costs Through Realistic Rates," "An Application of a Network of Minicomputers in Business," and "Creating Computer Awareness and Involvement by Top Management."

Other panels will deal with computer graphics, information retrieval systems, and the philosophy of data base administration.

Papers scheduled for these sessions include "Software for Satellite Graphics Systems," "Interactive Graphics in Water

Societies/ User Groups

Quality Investigations," "Toward a Specification of Syntax and Semantics for Languages for Horizontal Microprogrammed Machines" and "Computer Impact on Society and Vice-Versa."

The SIG/SICs, with very few exceptions, will be represented in one or more sessions.

The commercial program will feature presentations by hardware and software firms on the availability of the latest products.

Special conference events include the fourth computer chess championship tournament.

Registration for the conference is $50 for ACM members; $85 for non-members. For further information contact ACM '73, P.O. Box 4566, 30302.

Humanities Conference Explores Computers in Art, Literature

MINNEAPOLIS, Minn. – An International Conference on Computers in the Humanities will be held July 20-22 at the University of Minnesota.

The conference will provide a forum for scholars with diverse interests in the humanities to exchange ideas on computer techniques, applications and problems. Papers will be presented covering linguistics, literary studies, the creative arts and related fields.

Sessions include: "Automatic Novel Writing: a Status Report"; "A System for Aiding Thematic Analysis of French texts"; "Splat – a Computer Language for Artists"; "Frequency Study of Personal Pronouns in Four Brazilian Novels"; "Impact of Computing on Art and Architecture"; "Compose: a program for musical composition"; "Fortran as a medium for language analysis"; "Ethnic factors in New York City elections and 'ghettos': 1880-1905" and "Graphemic and related counts of Voltaire's Zadig."

Registration fee is $25; and $5 for students.

Co-chairman of the conference is Jay Leavitt, Department of Computer Sciences, 114 Main Engineering Bldg., University of Minnesota, 55455.

Simulation Conference Planned

MONTREAL – "Simulation – Increasing Its Credibility" will be the theme of the 1973 Summer Computer Simulation Conference, to be held July 17-19 at the Queen Elizabeth Hotel.

The keynote address will be delivered by Richard W. Hamming of Bell Labs.

Technical sessions will cover computer simulation, hybrid systems and simulations, and simulation validation.

"Essentials of Computer Communication and Its Impact on the Simulation Community" and "The Scientific Credibility of Scientific Models" are the topics of two special tutorials.

In addition, the conference will feature panel discussions on simulation validation and graphics for simulation.

Further information is available from Stewart I. Schlesinger, Aerospace Corp., P.O. Box 92957, Los Angeles, 90009.

ASM Names Congdon International President

CLEVELAND, Ohio – The Association for Systems Management has elected Frank P. Congdon Jr. as the 1973-74 international president. Congdon is manager of Management Information Systems for RCA's Aerospace Systems Division in Burlington, Mass.

Dr. Kenton E. Ross of Oklahoma State University was elected international president-elect.

COMPUTER INDUSTRY

CI Notes

Univac Buys Iko Software

OLSO, Norway – Iko Software Service, A.S. (Ikoss) has entered into two agreements with Univac.

Under the agreements, Univac acquires the right to use, copy and reproduce Optima, an integrated EDP system for planning and control of projects based on network technique. Ikoss will also lease a Univac 1106, with 256K words of core.

Data Products Exhibits in Moscow

CW West Coast Bureau

MOSCOW – Data Products Corp. has exhibited its products for the USSR Chamber of Commerce and Industry at a symposium at the Polytechnic Museum recently.

Among products shown were the 2470 high-speed printer; 2310 miniprinter; SR 1500 high-speed card reader; 8330 low-speed card reader and a variety of core memory products.

40% Mini Growth Seen in '73

BOSTON – A 40% to 50% increase in the commercial minicomputer systems market is expected in 1973, and perhaps an even larger growth in 1974, according to National Information Services President Gilbert D. Beinhocker.

"All business indicators are up in the minicomputer business," he said.

Wescon Exhibit 75% Signed

SAN FRANCISCO – Exhibitors at the Western Electronic Show and Convention (Wescon) here have contracted for more than 75% of the available space, according to Wescon organizers.

The rate of response is higher than in either of the past two years, General Manager Don Larson noted. The show will be in Brooks Hall Sept. 11-14.

Supershorts

Memorex has been granted patent no. 3,720,931 on the Airflow Control System for its 3670 Disk Storage Modules.

A Self-Actuating Air Baffle, a comb-like device located within the pack cavity, allows utilization of the spinning disk pack itself to "pump" filtered air throughout the drive, the firm explained.

GE has signed a contract with Hewlett-Packard to supply more than $1 million in Terminet 300 teleprinters over the next 18 months for inclusion in the HP 3000 and HP 2100-based computer systems.

– – –

Interdata, Inc. has signed a three-year OEM agreement with Nuovo Pignone of Florence, Italy, involving shipment of 25 to 30 New Series Model 70 systems, with 48K bytes of core in each system, for a total cash value in excess of $1 million.

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Mega Products Corp. has become agent for all Credit Systems Inc. products and Services.

– – –

A Software Products Group has been formed by Index Systems, Inc.

– – –

Matsushita Electric Trading Co., Ltd. has been named Japanese distributor for Applied Digital Data Systems Inc. (Adds) of Hauppauge, N.Y. for the distribution of Adds products in Japan.

– – –

Digital Scientific Corp. has selected Mitsui & Co., Ltd., Tokyo, as exclusive distributor in Japan of its Meta 4 systems and associated products.

– – –

Sycor, Inc. has announced a further expansion of its North American marketing efforts by opening sales offices in St. Louis and Indianapolis.

Documents Reveal Commanche's Death

IBM Planning Tape Cartridge System

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Whatever happened to the IBM Commanche program that called for the development of an automated tape library system that utilized one-half inch tape cartridges and which has been rumored in the computer industry for the past several years?

The Commanche program – which would have called for one high-price unit and a lower-priced entry unit – is dead, apparently from an inability to overcome certain technical difficulties.

. . . From Little Acorns

But while Commanche is dead, it has been replaced by Oak at IBM which calls for the development of a similar system for the FS Series of computers that will be announced in 1975 or 1976 if IBM sticks to its present schedules.

The reason for a new tape system, according to an IBM Management Committee report to the management review committee (uncovered here in Telex-IBM court documents), is that by the end of 1972 "we will have increased tape passing speeds and density recording on tape to the point where manual mounting and demounting of tape reels will be the gaiting factor in achieving tape data rate capacity in a system."

Commanche, which was to have been announced by the end of 1972 to meet this problem, "ran into cost and technical problems," the committee said.

However, it noted that the new approach, now called Oak, even though also based on the cartridge concept, "should give better cost while maximizing operating efficiency."

The objective of the new program "is to provide a new standard interchange media that is price/performance competitive with one-half inch tape and has excellent sequential processing and direct search capability."

"This will he accomplished by increasing the length of tape and operating on a reel-to-reel basis. The Oak program will consist of a family of products ranging from stand-alone to library containing as many as 10,000 cartridges. Approximately 1-1/2 in. cartridges will be required to handle one reel of the current tape," the planners said.

While the Oak program is most often referred to in the time frame of the FS Series of the 1975 period, there are also some indications in the documents that it might be released as early as the last quarter of this year – or that the initial segment of the system will be released then.

However, the program has run into some difficulties, according to later notes.

For example, there was some disagreement over the head approach for the system with development going on in the area of rotating heads as well as in the more traditional tape head approaches.

The latest documents available indicate that the rotating head approach was making excellent progress and "is now in a strongly competitive position with respect to the standard head approach."

However, the Management Committee decided at that time to fund research and development in both the rotating head approach and in the staging head approach so the final outcome is not at all certain at this time.

Cost Overruns Plagued CMIS Development at IBM in '69-'70

By a CW Staff Writer

TULSA, Okla. – Users who have faced massive problems implementing management information systems and have had to face the problems of cost overruns and runaway costs may be able to sympathize with IBM, which faced similar problems in 1969 and 1970.

The major problems occurred with the CMIS system that was then under development and which apparently was a precursor for inventory management and marketing purposes, and was one of two massive management information systems then under development at IBM.

The program, according to recently released secret minutes of the IBM Management Committee (MC), "is running into additional schedule and increased cost."

Development Costs Up

At the time, the IBM managers estimated that the development costs of the system had risen to $189 million to implement from the forecast $122 million.

Later this projected cost was to rise even more to $198 million and the planners noted the cost would have been substantially higher if IBM had had to pay the then current market price for its equipment instead of getting a discount for in-house use.

The Management Committee "was concerned on two counts. First the dollar expenditure and secondly, the control question."

The system was to provide for standardization of data records and centralized part planning, the documents showed, and was to have paid for itself by 1977 through savings through the reduction of inventory and the cost of storing extra or unneeded inventory of parts.

However, the Management Committee closely questioned some of the cost justifications for the system, the documents noted, and in 1970 the Data Processing Group was forced to cut back by 25% the number of programs slated for the system.

The committee, when it indicated that much of the cost justification for the system "was very intangible," said "while the concept is sound, all are marching toward it with no alternatives between our present system and the ultimate.

"The MC was also concerned that there is a whole host of applications at the plant site that are not directly involved in CMIS and therefore the total DP Group cost could he understated, particularly in view of the need to bridge from CMIS to the individual plant systems."

The cost-cutting program on the system was instituted enabling the firm to cut back the cost of it from $63.5 million to $43.4 million in 1970 and from $72.5 million to $55.8 million in 1971.

But another problem was that of the personnel who were working on the project. The IBM managers noted they would have to cut those 1,000 employees through attrition after the project had been completed.

The problem was so serious the IBM managers also discussed the possible abandonment of the program even though it was then in the middle of the development and implementation cycle.

However, "the net of this was that should the effort be abandoned at this point, some $50 million of sunk cost would be wasted and that the net savings would be marginal."

At the same time, the planners noted that the additional $96 million required to complete the system in 1970 would enable the company to save approximately $55.5 million over the next 10 years – a far cry from the earlier cost justifications that predicted the system would pay for its entire development costs through later savings.

Another factor that prevented the managers from dropping the program completely when these cost overruns were discovered was the fact that the necessary patching of the existing programs would cost almost as much as the full CMIS development.

In USSR, Eastern Europe, Japan

High 5-Year DP Growth Predicted

NEWTONVILLE, Mass. – Markets for DP equipment in the USSR, Eastern Europe and Japan are expected to display high growth rates in the next five years, according to a recent report by International Data Corp., a market research firm here.

The combined base of computer equipment in these three markets will grow at rates varying from 23% to 34% per year through 1975, the report noted.

The study found that there should be "exceptional opportunities," especially in peripheral equipment and software, "although penetration of these markets will require clever negotiating and established marketing resources."

All three markets are responding to government emphasis on upgrading national capacity for DP equipment, and all are weak in the areas of peripheral equipment, software and trained personnel, the study noted.

While all want a strong native industry, none has developed "significant indigenous capabilities. And, with all three, Western influence has been primarily in the form of manufacturing licensing agreements," the study reported.

In 1972, Eastern Europe, with an installed base of 3% of that of the U.S., is expected to grow at an annual rate of 23% until 1975. Eastern European countries include Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland and Romania.

Japan in 1972 had an installed base 29% of the size of the U.S.'s, and an annual growth of 34% is projected.

The USSR is expected to achieve a 32% annual growth in its computer market through 1975, according to IDC. The USSR currently has an installed base 6% the size of that in the U.S.

L.A. County Ponders Suit Against SDC

CW West Coast Bureau

LOS ANGELES – The board of supervisors has requested an in-depth investigation of the county's Regional Justice Information System (RJIS) to determine if it should sue System Development Corp. (SDC).

A $307,880 suit against SDC was urged hy Supervisor Kenneth Hahn who charged that RJIS has flopped because of "bureaucratic bungling."

Bernard Fried, SDC vice-president, said SDC was "completely surprised by the charges and feels it has fully satisfied the requirements of its contractual obligations."

Hahn said a total of $911,522 was spent on RJIS, which was to provide computerized information on criminal cases from arrest through prosecution, sentencing and release.

Amended Complaint Allowed

SBC Employee Suit Still Alive

By Molly Upton
Of the CW Staff

SAN JOSE, Calif. — While IBM's legal eagles are occupied with the Telex trial in Tulsa and the Justice antitrust case in New York, a suit filed by a Service Bureau Corp. (SBC) employee against IBM is still alive, according to the plaintiff's attorney.

U.S. District Judge Spencer Williams denied IBM's motion for summary judgment on the original suit filed by Albert R. Weiss [CW, Feb. 28], and allowed an amended complaint to be filed that seeks damages for the hardships caused by the transfer of SBC from IBM to Control Data Corp.

The complaint has been amended to add the name of another plaintiff, William A. Robinson, and to delineate specifically the grounds for complaints.

The suit seeks damages for the plaintiffs in excess of $10,000, for loss of present and future IBM job security and IBM benefits and asks for a permanent injunction restraining IBM from enforcing the six-year restriction on IBM's hiring of SBC employees.

An IBM spokesman said, "We believe the suit to be without merit."

The suit was denied class status once, but attorney William Wilburn indicated the judge could yet decide to grant class status.

Part of Settlement

One of the major contentions centers around IBM's refusal to hire any SBC employee for six years from the date of the transfer of SBC to CDC.

The plaintiffs allege that this agreement "unreasonably restrains said employees from exercising their lawful trades" and is in violation of Section 16600 of the Business and Professions Code of the State of California.

"Plaintiffs' amended complaint seeks not only damages, but also an injunction and declaratory relief as a result of the six-year restriction imposed by defendant International Business Machines on rehiring plaintiffs and the other employees of Service Bureau Corp."

The suit contends that prior to Jan. 12, 1973, all persons listed by IBM/SBC as regular employees were, in reality, employees of defendant IBM.

SBC a 'Shell'

It further charges that "at all times since the incorporation of IBM/SBC, it has been a mere shell and naked framework by means of which defendant IBM nominally and only colorably complied with the letter and not the spirit of a certain 1956 Consent Decree requiring, *inter alia*, the Service Bureau department business to be conducted as Service Bureau Corporation."

The plaintiffs allege that IBM "wrongfully and without cause, discharged plaintiffs and other employees of IBM/SBC," which was a breach of the employment contract between defendant IBM and the employees of IBM/SBC."

The suit also alleges that IBM "acted contrary to the reasonable expectation of plaintiffs, induced by defendant, by effectively selling plaintiffs as part of a sale of IBM/SBC."

GCS Looks to Foreign Sales

DALLAS — General Computer Systems anticipates that international business will continue to represent about 50% of its activities during the current year, according to GCS president Barry Weinberg.

This prediction followed the receipt of an order from S.A. Engins Matra, Paris, France, for the purchase of 25 GCS 2100 systems. The systems are marketed as the Matra 430 data entry system in France.

CBema Endorses President's Trade Bill

WASHINGTON, D.C. – Computer and Business Equipment Manufacturers Association (CBema) President Peter F. McCloskey recently endorsed the "necessity for and thrust of" the Trade Reform Act of 1973 in testimony before the Committee on Ways and Means, but made several recommendations on the bill.

Although in 1972 the computer and business equipment industry as a whole exported $1.79 billion with imports of $707 million, during the past three years the industry's export growth "has merely matched the growth in imports, giving a contribution to the U.S. trade balance of approximately $1.1 billion," he said.

Among the factors he cited as responsible for the slowdown were: governmental restrictions on sales to the Eastern European block, the USSR and China; rapidly increasing foreign competition and restrictions on the products of U.S. firms in this industry; economic and monetary problems in the U.S. as well as slowdowns in Europe and Japan.

McCloskey emphasized the adverse impact that would result from controls over the export of technology, noting that "in an open society such as ours no basic technological advance is secret for long."

In addition, he said, "most transfer of technology is to affiliates of the originator, therefore, the benefits come back continually. We need foreign technology."

The association opposes provisions for taxation of foreign source income as being "self-defeating, arbitrary and counter-productive."

McCloskey said businesses usually consider the impact of taxes in deciding where to locate abroad, not whether to locate abroad, and he called the provisions proposed so vague that "considerable uncertainty would be cast over evaluation of the tax aspects of most foreign investments"

He recommended that more avenues be opened for consultation with industry prior to and during the negotiation process, which would help insure that negotiators have the powers necessary to produce the changes needed in the rules of international trade, he said.

McCloskey further suggested that Congress have the authority to review proposed total elimination of tariffs or significant upward revision.

CBema also endorsed the most favored nation treatment which "should be accorded on an equal basis to all countries with whom considerations of national security do not justify embargo of trade."

This would help separate trade policy from political policy, he suggested.

Ex-Employees File Suit Against Telex

CW West Coast Bureau

SANTA CLARA, Calif. – Four former employees of the Direct Access Storage Division of Telex Computer Products Inc., have filed suit against the company alleging it failed to pay them six months' salary and conspired to prevent them from getting other jobs.

The suit was filed in Santa Clara County Superior Court for Alonzo A. Wilson, Robert J. Hancock, Richard J. Charlton and Shanlin Hou, who were employed in managerial positions at the Direct Access Storage Division, which was closed in April 1972.

J.B. Bailey, vice-president and general counsel for Telex, said the suit was "without merit" and said counsel had been retained in San Francisco to defend Telex.

The suit seeks six months' salary for each of the men and general damages of $25,000 and punitive damages of $100,000 for each of the men.

Attorney John W. Clark of the law firm of Wilson, Mosher & Sonsini, Palo Alto, said the suit is based in part on a letter allegedly sent to the men promising them that if for any reason operations in Santa Clara ceased within one year of the date of the letter, then each would receive six months' salary.

Foreign Orders & Installations

Cheques Postaux, la Caisse Nationale d'Espergne, a French post office and savings bank, has ordered a CMC-9 key-processing system from Computer Machinery Corp.

General Motors in Sao Paulo, Brazil, has installed a Management and Computer Services, Inc. Datamacs proprietary test data generator.

Alfred Herbert, British machine tool manufacturer, has ordered a Univac 9700 to replace an IBM 360/40. The system will centralize computer services for administration and production functions.

The State Government Insurance Office of Queensland, Australia, is installing two Control Data Corp. Cyber 70 Model 72 computer systems and 40 display terminals to process policy information.

Boots the Chemists of Nottingham, England, has installed an Electronic Memories Ltd. IBM plug-compatible memory.

Beamtenheimstaettenwerk GmbH, a building and loan association for employees of the West German government, has ordered a second Univac 494 real-time computer system to be used primarily for administration of construction projects.

The Schweizer Bank Verein of Switzerland has leased Computer Machinery Corp.'s Keyprocessing systems to replace its keypunch systems at banks in Geneva, Zurich and Basel.

Litton Industries has installed a point-of-sale system in a new branch of La Rinascente, one of Italy's largest retail chains.

Lack of Policy Seen Deterring Aussie DP

Special to Computerworld

SYDNEY, Australia – The absence of government guidelines regarding offset policy is making longer term planning for the computer industry difficult, said the managing director of Control Data Australia, Herb Hughes.

There are, accordingly, no short solutions to questions such as local equity and joint ventures.

Offset policy refers to arrangements to keep the balance of payments stable.

Control Data is the only U.S. mainframe manufacturer to set up an Australian manufacturing operation. This is located at Cheltenham, Melbourne, Victoria, and came into being after CDA gained the Victoria Totalisator Agency Board (TAB) contract.

CDA is negotiating with the Australian government regarding an intention to manufacture a visual display unit to be exported world-wide.

NCR Names Anderson Chief Executive

DAYTON, Ohio – William S. Anderson, NCR president and chief operating officer since May 1972, became chief executive officer July 1.

As chief executive, Anderson will succeed Robert S. Oelman, chairman since 1960, who plans to retire on June 30, 1974, following his 65th birthday.

NCR said the move to make the company's president the chief executive was recommended by Oelman "in the interest of an orderly transition of management functions."

MAI Reorganizes

NEW YORK – Raymond P. Kurshan, president and chief operating officer of Management Assistance, Inc. (MAI), has been named to the additional post of chairman of the executive committee of the board of directors.

Richard J. Schmeltzer, president of Sorbus, Inc., MAI's domestic service subsidiary, will assume the additional position of executive vice-president, domestic field operations. In addition, Charles F. Trayes, an outside director and retired bank officer, has been named to the executive committee of MAI.

Other Moves

■ Dr. Lawrence G. Roberts, director of information processing techniques for the Advanced Research Projects Agency (Arpa) in the Department of Defense, will join Telenet Communications Corp. on Sept. 3 as president and chief executive officer. During his association with Arpa, Roberts conceived and managed the development of the Arpanet, the first packet-switched computer communications network.

■ Dr. Donald R. Haring has been elected president and chief executive officer, and Ephraim Gitelman has been elected vice-president, engineering, of Computek, Inc., manufacturer of alphanumeric and graphic displays. Both men have been with Computek for most of its five-year history.

■ Max P. Beere has been named a vice-president of Packet Communications, Inc., responsible for the marketing of Packet's value-added network service, Vanline. Beere joins Packet from Tymshare, Inc., Cupertino, Calif.

■ Richard E. Kaylor has been named executive vice-president of Informatics, Inc. Kaylor will presently retain his position of president of Informatics Computing Technology Co., River Edge, N.J., a major operating unit.

■ Robert A. Degan has been promoted to senior vice-president in charge of marketing and computer services within National CSS, Inc.'s newly formed Data Services Group.

Executive Corner

Interdata Applies To Renew GSA Listing

OCEANPORT, N.J. – Interdata, Inc. has applied for renewal of its listing on the Federal Supply Schedule by the General Services Administration.

It is anticipated, according to an Interdata spokesman, that the Federal Supply Schedule for fiscal year 1974 will carry prices, terms and conditions for the "new series" family of processors, along with associated peripherals, software, field maintenance and spare parts.

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L.J. PRINCE
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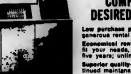

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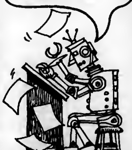

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Toward the Bottom Line...

Money time: California Computer Products has obtained a $60 million revolving credit agreement with four banks led by First National City Bank. The line is available through Jan. 1, 1975.

$$$

Tesdata Systems, through the sale of equity interest to Sprout Capital Group, has obtained up to $350,000 in additional financing. Funds will be used for two new hardware products.

$$$

Data 100 has completed the final portion of a financing that has netted the firm $11.5 million in cash and $600,000 in debt reduction.

$$$

Automatic Data Processing indicated a customer that has terminated operations, Weis Securities, owes it about $73,000 in receivables. During the first 10 months of ADP's fiscal year, revenues from Weis of about $270,000 accounted for about 2.5% of all revenues from the company's Financial Services Division.

$$$

A sharp rise in first quarter income for Western Union Computer Utilities, from $88,057 to $250,909, was attributed to eight new data centers licensed during the quarter. President B.G. Mendelson cautioned that the annual growth rate for 1973 cannot be predicted based on the first quarter.

$$$

About 86% of the outstanding shares of Bresnahan Computer have been tendered to Greyhound Computer.

$$$

Ampex Posts $1.1 Million Earnings For Year and Profitable 4th Period

REDWOOD CITY, Calif. – It's been a couple of years since Ampex Corp. has seen black ink for a fiscal year, but the firm managed to post a profitable year and fourth quarter ended April 28.

With revenues of $294 million, Ampex reported earnings from continuing operations of $1.1 million or 10 cents a share. Total earnings were $3.7 million or 34 cents a share after a $260,000 loss from discontinued operations and a $2.8 million gain from the sale of Mandrel Industries, Inc.

Comparable results for 1972 are unavailable, as accountants said results couldn't be delineated from fiscal 1971 results. Ampex lost $101.7 million in the two years.

In the fourth quarter, the firm earned $2.7 million or 25 cents a share after a $541,000 loss from discontinued operations.

Orders are "strong" for videotape recording equipment and computer tape, President Arthur H. Hausman noted.

Backlog at the end of April totaled about $95 million to $100 million, up about $10 million from the year-ago period.

Hausman said he expects earnings in the new fiscal year to top the 10 cents a share from operations during 1973.

Hausman emphasized that Ampex has reduced its consolidated debt by $91.7 million during the past 18 months.

Rapidata Expects Flatter Earnings

FAIRFIELD, N.J. – Rapidata, Inc.'s second quarter earnings may be flat or down from the year-ago period, according to President Stewart B. Gold.

Although revenues in the quarter ending June 30 are expected to rise between 10% to 12% above those a year ago, earnings may be down from the 14 cents in the same period last year.

The year-to-year revenue growth, which was up 35% in the first quarter, will "fall somewhat short of our expectations in the current quarter" due to absence of growth in revenues from the New York Telephone Co. until the beginning of a new contract, and specific personnel problems in the sales area, he said.

Acquisitions

American Management Systems, Inc. of Arlington, Va., has acquired Compass Co., provider of project control techniques and financial management systems to the construction industry.

Broomall Industries, Inc. has acquired the complete digital plotter product line of Harris Communication Systems of Dallas, valued at more than $1 million.

MCD Enterprises, Inc., a home builder and resort hotel owner and operator, has agreed in principle to acquire Clasco, Inc., a Rockland, Md., based career education company which operates computer schools, in a tax-free exchange of shares.

Xiox International, Inc., Miami, Fla., has agreed to acquire 100% interest in Computer Network Services, SA, of Brussels, Belgium, for 400,000 shares of Xiox common stock.

Informatics, Inc. has acquired SDA Corp., Cheverly, Md., for 141,167 shares of Informatics stock on a pooling-of-interests basis.

Informatics, Inc. has acquired Asystance Co., Raleigh, N.C., for an undisclosed amount of cash and common stock.

Earnings Reports

NATIONAL COMPUTER SYSTEMS
Year Ended Jan. 31

	1973	1972
Shr Erng	0.93	0.62
Revenue	5,027,100	4,388,000
Tax Cred	253,100	111,500
Earnings	496,300	226,400

ELECTRONIC DATA SYSTEMS
Three Months Ended March 31

	1973	1972
Shr Erng	0.33	0.27
Revenue	28,253,452	23,682,020
Earnings	3,947,472	3,238,995
9 Mo Shr	.90	.75
Revenue	81,821,644	65,417,197
Earnings	10,712,430	8,868,872

STORAGE TECHNOLOGY
Three Months Ended March 30

	1973	1972
Shr Erng	0.49	0.07
Revenue	11,334	3,732,000
Tax Cred	649,000	98,000
Earnings	1,699,000	207,000

DATUM
Year Ended Dec. 31

	1972	1971
Shr Erng	0.26	0.18
Revenue	6,695,542	4,013,612
Earnings	348,511	194,381
3 Mo Shr	.08	.07
Revenue	2,477,278	1,465,027
Earnings	132,803	81,469

VICTOR COMPTOMETER
Three Months Ended March 31

	1973	a1972
Shr Erng	0.18	0.08
b Revenue	50,549,660	44,046,209
Disc Op	.....	(349,635)
Earnings	943,210	526,731

a-Restated to reflect acquisition of Nissen Corp. in October 1972 on a pooling-of-interests basis. b-From continuing operations.

ELECTRONIC ASSOCIATES
Three Months Ended March 30

	1973	a1972
Shr Erng	0.26	0.07
Revenue	8,875,000	8,998,000
Spec Cred	b595,000	.....
Earnings	c607,000	179,000

a-Restated to include Infonics Inc. on a pooling-of-interests basis. b-From tax-loss carryforward and currency realignments.

QUANTOR
Six Months Ended Jan. 31

	1973	1972
Shr Loss	0.34	0.72
Revenue	1,538,130	1,040,884
Spec Chg	d200,000	.....
Loss	657,806	813,444

d-From establishment of reserve for replacement of unidentified factory components and discontinued product inventories.

HEWLETT-PACKARD
Three Months Ended April 30

	1973	1972
Shr Erng	0.54	0.33
Revenue	163,622,000	118,572,000
Earnings	14,569,000	8,573,000
6 Mo Shr	0.87	.56
Revenue	290,588,000	214,536,000
Earnings	23,214,000	15,202,000

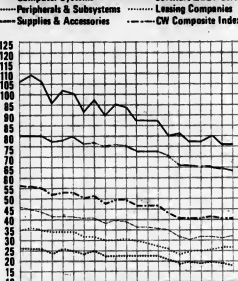
a-Includes gain from revaluation of currencies.

GENERAL AUTOMATION
Three Months Ended April 30

	1973	1972
Shr Erng	0.23	0.15
Revenue	7,767,000	4,052,000
Tax Cred	.....	140,000
Earnings	564,000	301,000
9 Mo Shr	.91	.50
Revenue	19,831,000	10,560,000
Earnings	2,185,000	442,000
Earnings	2,015,000	912,000

COMPUTER MICROTECHNOLOGY
Three Months Ended March 31

	1973	1972
Shr Erng	0.05	0.12
Revenue	525,733	441,983
Earnings	15,857	39,856



Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE•DUTTES, INC. Cambridge, Mass. 02139

E X C H N		STOCK	SALES IN HNDS	WEEK HIGH	WEEK NET CHNGE
			1973 RANGE	CLOSE 1972		
			(1)			
		SOFTWARE & EDP SERVICES				
O		ADVANCED COMP TECH	1- 2	1 1/6	+ 1/8	+12.5
O		APPLIED DATA RES.	1- 3	2	+ 1/8	+6.6
O		APPLIED LOGIC	1- 3	1 1/2	+ 1/8	+9.1
O		AUTOMATIC INFO PROC	4+ 84	43	+5	+13.3
O		BRANDON APPLIED SYST	1- 1	1 1/2	0	0.0
O		CENTRAL DATA SYSTEMS	1- 4	7 1/2	0	0.0
O		COMPUTER DIMENSIONS	2- 5	3	- 1/4	-7.8
O		COMPUTER DYNAMICS	1- 2	5/6	0	0.0
O		COMPUTER HORIZONS	1- 6	1 1/6	- 1/2	-26.5
O		COMPUTER METHODS	1- 5	1 5/6	+ 1/8	+10.0
N		COMPUTER SCIENCES	2- 6	3 1/2	+1	+40.0
O		COMPUTER TECH GROUP	1- 2	1 1/6	0	0.0
O		COMPUTER TECHNOLOGY	1- 1	1	0	0.0
O		COMPUTONE	1- 3	1 1/6	+ 1/6	+9.1
O		COMSHARE	4- 8	2	0	0.0
O		CONSBANC	4- 9	5 1/2	0	0.0
O		CONSURA CORP	1- 3	1 1/6	- 1/6	-7.1
O		CYBERNETICS INC	1- 3	1 5/6	- 1/6	-7.1
A		DATATAB	1- 4	2 1/2	- 1/2	-16.6
A		ELECT COMP PROD	1- 2	1 3/6	- 1/8	-10.0
N		ELECTRONIC DATA SYS.	24+ 54	33 1/6	+3 1/8	+10.3
O		INFORMATIONAL DYNAM	1- 2	3/6	+ 1/8	+50.0
O		INFONETICS	2- 6	3 5/6	- 1/8	-3.2
O		INFO. MGT. SYSTEMS	1- 3	1 1/2	0	0.0
O		INTERNATIONAL COMMERCE,	1- 1	1	0	0.0
O		KEANE ASSOCIATES	2- 3	3	0	0.0
O		KEYDATA CORP	1- 12	2	- 1/8	-5.8
O		LOVICOM	4- 7	3 7/6	+ 3/8	+16.7
O		MANAGEMENT DATA	1- 2	1 1/6	0	0.0
O		NATIONAL CSS INC	1- 41	24 1/2	+6	+19.5
O		NATIONAL COMPUTER CO	1- 1	1	0	0.0
O		NATIONAL INFO SVCES	1- 1	7/6	0	0.0
O		ON LINE SYSTEMS INC	1- 12	12 1/6	0	0.0
N		PLANNING RESEARCH	2- 7	2 3/6	+ 1/8	+5.9
O		PROGRAMMING & SYS	1- 2	1	0	0.0
O		PURDUE RSCH & SYS	1- 1	3/6	0	0.0
O		SCIENTIFIC CONTROL	3- 8	3 3/6	- 3/6	-9.0
O		SCIENTIFIC COMPUTERS	1- 3	1	0	0.0
O		SIMPLICITY COMPUTER	4- 6	2	- 5/8	-23.8
O		TYM COMPUTER CONTRLS	1- 3	2 1/6	0	0.0
O		TCC INC	1- 1	1/6	0	0.0
O		TYMSHARE INC	6- 12	7 3/6	0	0.0
O		UNITED DATA CENTER	1- 6	3 3/6	- 1/6	-4.2
N		UNIVERSITY COMPUTING	1- 11	4 3/6	- 3/6	+7.5
A		WHB SYSTEMS	1- 1	1/6	0	0.0
		PERIPHERALS & SUBSYSTEMS				
N		ADDMASTOGRAPHMULT	2- 38	1 1/2	- 3/6	+2.4
O		ADVANCED MEMORY SYS	2- 3	2	+1/6	+13.6
O		AMPEX CORP	4- 7	5	+ 1/6	+3.4
O		ANDERSON JACOBSON	1- 6	3 1/6	+ 1/6	+5.4
O		BENTLEY MEDICAL ELEC	4- 10	3 1/6	+ 1/6	+5.4
O		BOLT-BERANEK & NEW	1- 12	3	+ 1/6	+5.4
N		BUNKERHUNNU	4- 15	9 7/6	+ 1/6	+2.5
A		CALCOMP	1- 10	5	+ 1/6	+3.4
O		CAMBRIDGE MEMORIE	10- 15	4	- 1/6	-3.6
O		CENTRONICS DATA COM	1- 4	2	+ 1/6	+8.3
O		COMEX CORP	1- 19	10 3/6	- 1/6	-2.4
O		COMPUTHINICS	1- 4	2 1/6	0	0.0

F T C H		STOCK	SALES IN HNDS	WEEK HIGH	WEEK NET CHNGE
			1973 RANGE	CLOSE 1972		
			(1)			
O		COMPUTER COMMUN.	1- 4	1 3/6	0	0.0
A		COMPUTER EQUIPMENT	1- 2	3/6	- 1/6	-11.7
O		COMPUTER FINANCING	1- 13	5	- 1/6	-4.7
O		COMPUTER TRANSCRIBER	1- 3	1 1/6	- 1/6	-7.6
O		COMRAD CORP	1- 37	15 3/6	-1	-6.9
O		DATA ACCESS SYSTEMS	2- 3	1 1/6	- 1/6	-10.0
O		DATA 100	4- 14	5	+1 3/8	+13.2
O		DATA PRODUCTS CORP	1- 4	2	- 1/6	-5.8
O		DATA RECOGNITION	2- 3	1 1/6	0	0.0
O		DATA TECHNOLOGY	2- 3	2	0	0.0
O		DECISION DATA COMPUT	4- 40	7 3/6	+ 1/6	+2.3
O		DELTA DATA SYSTEMS	1- 1	1 1/6	+ 1/6	+9.0
O		DIGHN CONTROLS	2- 4	3 1/6	0	0.0
O		ELECTRONIC	2- 3	2	0	0.0
O		FABRITEK	1- 2	1 1/6	- 1/6	-7.6
O		GENERAL COMPUTER SYS	5- 8	5 1/2	- 1/2	-8.3
O		GENERAL ELECTRIC	1- 3	1 1/6	- 1/6	-7.6
N		HAZELTINE CORP	1- 9	5 1/6	+ 7/8	+15.2
O		INFOMEDIA	1- 3	1 1/6	+1 1/2	+36.0
O		INFORMATION DISPLAYS	1- 2	3/4	0	0.0
O		INFORMATION INTL INC	10- 15	9 3/4	- 1/6	-2.4
O		LUNDY ELECTRONICS	1- 2	1 1/6	- 1/6	-7.6
O		MANABIMILAT ASSIST	1- 1	1/4	0	0.0
A		MILGO ELECTRONICS	1- 20	15 7/6	- 1/6	-1.0
N		MINNEAN DATA SCI	2- 13	3	+ 1/2	+20.0
O		OPTICAL SCANNING	1- 1	3/4	- 1/6	-16.6
O		PERIPHERAL PLANNING	1- 2	1	0	0.0
O		PHOTRON	1- 9	5 3/6	+ 1/6	+4.8
O		PRINCETON	1- 1	1/4	0	0.0
A		POTTER INSTRUMENT	4- 9	3 5/6	+1/8	+3.8
O		PRINTRONIX INC	1- 2	1 1/6	0	0.0
O		QUANTOR CORP	4- 10	7 3/6	+1	+14.8
O		RECOGNITION EQUIP	1- 4	2 1/6	- 1/6	-7.6
N		SANDELS ASSOCIATES	7- 16	3 1/6	- 1/6	-4.8
O		STANDARD	1- 1	1/6	0	0.0
O		STORAGE TECHNOLOGY	12- 36	11 1/2	- 1/6	-1.0
O		SYKES DATRONICS	1- 2	1 1/6	- 1/6	-7.6
O		TALLY CORP.	2- 14	3	- 1/6	-4.7
O		TRIAD	1- 1	1/6	0	0.0
N		TEXTRONICS INC	30- 53	31 7/6	+ 3/6	+2.4
O		VARIAN	1- 4	2 1/6	0	0.0
O		WANGCO INC	9- 13	7 1/2	-1	-11.7
N		WELTEK INC	1- 3	1 1/6	- 3/4	-7.8
		SUPPLIES & ACCESSORIES				
O		MALTIMAN BUS FORMS	4- 9	9	0	0.0
A		GARVEY-MARCH	1- 13	3 3/4	- 1/8	-3.2
O		GRAPHIC CONTROLS	17- 22	16 7/8	- 1/8	-0.7
O		INFELLIGENCES INC	1- 2	1	0	0.0
N		KINNES MUS. TOWNS	5- 6	5 1/4	- 1/8	-2.3
O		KUKER ELECTRONICS	1- 20	12 1/6	- 1/6	-1.0
O		MARPHIC CONTROLS	4- 12	5 1/6	- 1/6	-1.4
O		3M COMPANY	70- 83	83 3/4	- 1/4	-1.8
O		MOORE COMP LTD	5- 40	36	- 1/4	-1.4
O		NASHUA CORP	4- 59	44 1/4	- 1/4	-1.4
O		REYNOLDS & REYNOLD	10- 51	43 7/8	+1 1/8	+2.7
O		STANDARD REGISTR	1- 20	19 1/2	- 1/4	-1.2
O		TAB PRODUCTS CO	10- 23	19	- 1/4	-1.2
O		TRIMCO	1- 7	3 1/2	- 1/4	-6.6
A		WRIGLEY MANUFACTR	1- 10	7	- 1/4	-3.4
O		XEROX CORP FORMS	1- 26	18 3/8	0	0.0

E X C H N		STOCK	SALES IN HNDS	WEEK HIGH	WEEK NET CHNGE
			1973 RANGE	CLOSE JAN 29		
			(1)	1973		
		COMPUTER SYSTEMS				
N		MUMMERMINI CORP	211-264	236 1/4	+8 1/4	+3.7
O		CULLINE MANU	1- 26	14 1/4	- 1/2	-3.4
U		COMPUTER AUTOMATION	1- 16	9 1/4	+1 1/4	+15.4
O		CENTRAL DATA CORP	15- 62	30 1/2	- 3/4	-2.4
O		DATA GENERAL CORP	24+ 44	39 1/2	+5 1/4	+16.7
O		DATAPOINT CORP	1- 4	2 1/2	- 1/2	-5.2
O		DIGITAL COMP CONTROL	11- 21	11 1/4	0	0.0
N		DIGITAL EQUIPMENT	72+ 134	93 1/2	+3 3/4	+4.2
O		ELECTRONIC ASSOC	1- 11	6	0	0.0
O		ELECTRONIC ENGINEER+	1- 11	6 1/2	-1 1/4	-15.6
O		FLEXIBLE	23- 32	29	+1 1/4	+4.5
O		GENERAL AUTOMATION	22- 55	25 1/2	+4	+18.6
O		HEWLETT-PACKARD	72- 95	94	+3	+3.3
O		HEWLETT-PACKARD CO	74+ 95	78 5/8	+3 1/2	+4.8
O		HONEYWELL INC	90+139	139 1/4	+3 1/4	+2.4
N		IBM	287+ 360	319 3/4	+4 1/4	+1.3
O		INTEGRATED INC	7- 13	9 1/2	+1 1/4	+15.2
N		MEMOREX	7+ 14	9 1/4	+ 3/8	+4.2
O		MICRODATA CORP	1- 10	3	+ 1/4	+9.0
N		NCR	27+ 37	38 7/8	+ 7/8	+2.4
O		PERKIN-ELMER CO	2+ 24	20 1/4	+1 1/4	+6.6
N		SINGER CO	43+ 74	43 3/4	+1 1/8	+2.3
O		SPERRY RAND	34+ 56	50 3/4	+2 1/2	+5.2
A		SYSTEMS ENG. LABS	3- 8	3 1/4	- 1/4	-7.1
O		TEXAS INSTRUMENTS	80+ 112	110	+3 3/8	+3.2
O		ULTIMATE SYSTEMS INC	1- 11	5	- 1/4	-4.7
O		WANG LABORATORIES	3- 10	11 3/4	+1 1/2	+14.6
N		WANG LABS.	13+ 34	14 1/4	+ 3/4	+5.5
O		XEROX CORP	147+ 215	215 5/8	+3 1/8	+2.8
		LEASING COMPANIES				
A		AMDINE COMPUTER	1- 5	1 1/4	-1/4	-15.3
O		COMDISCO	1- 5	2 1/4	0	0.0
O		COMDISCO INC	9+ 17	6 1/4	- 1/4	-3.8
O		COMMERCIAL COMP CORP	1- 2	1 1/4	- 1/4	-16.6
O		COMPUTER EXCHANGE	1- 1	1/2	0	0.0
O		COMPUTER INVESTMENT	1- 2	1 1/4	-1 3/4	-58.3
O		COMPU-INSTALLATIONS	1- 2	1	0	0.0
O		ELECTRONIC RENTALS	2- 3	2/4	0	0.0
A		MCL INC	1- 3	1 3/4	- 1/4	-12.3
O		MEMOREX-STORE	1- 2	1 1/4	- 1/4	-16.6
O		UMS INC	1- 9	4 1/2	- 1/4	-5.2
O		UNICOMP	1- 2	1	0	0.0
O		UNI-PAY CHECKS	1- 3	1 1/4	0	0.0
O		WASHINGTON-STORE	1- 3	1 1/4	0	0.0
O		UMS INC	1- 9	4 1/2	- 1/4	-5.2
O		UNICOMP	1- 2	1	0	0.0
O		UNI-PAY CHECKS	1- 3	1 1/4	0	0.0
O		WASHINGTON-STORE	1- 3	1 1/4	0	0.0
A		ITEL	4- 12	4 3/4	- 1/4	-5.0
O		LEASCO	4- 12	6 3/4	- 1/4	-3.6
O		LEASCO CORP	2- 9	3 1/4	- 3/8	-10.7
O		LYSTINI MGT INC	1- 2	1 1/4	0	0.0
O		UMS INC	6- 14	7	- 3/8	-5.0
A		MINICHINO COMPUTER	1- 4	1 1/4	0	0.0
O		U.S. LEASING	1- 4	1 3/4	- 1/4	-12.5

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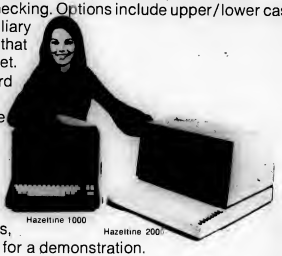

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